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REVIEWS OF NEW BOOKS.

Australia and the East: being a Journal of a Voyage to New South Wales, &c., Residence in Sydney and the Bush, and the Route Home by India and Egypt, in 1841-2. By John Hood. 8vo, pp. 465. London, Murray.

THE "experiences" of Mr. Hood, an intelligent agriculturist of Berwickshire, like the Lothians, one of the best-cultivated counties of Scotland, are well worthy of the public attention. Few men have visited Australia more competent to form a judgment of its capabilities; and, as far as the author had time to see and examine the country, his practical statements are of peculiar value. As is usual, when books of this sort are published, we are treated with an account of preliminaries and the voyage out, which seldom conveys much real information, though it may pass for its amusement as personal narrative. We shall therefore skir on to the chief scene of action (whither Mr. H. and his son proceeded) with little delay or previous remark. The troubles of the outset in an emigrant-ship, however, deserve notice, as they fell out at Plymouth in the Lady Kennaway, of 584 tons, bound to Sydney direct:—

"If the cabin was deficient in comfort, it was a paradise when compared with the other parts of the ship. There the scene below decks baffles description,—Irish, Scotch, English, Germans, French—mechanics, cottagers, watchmakers, and ladies of all descriptions, young, old, and middle-aged. Some were tolerable in appearance; but the majority, chiefly Irish, were of the coarsest fabric of womankind. In the evening dancing was resorted to, to keep all in good humour. I went into my berth, expecting that by day-break we should have weighed anchor and got out of the Sound; but no such good luck awaited us. By six o'clock six men had refused to work the ship; and it appeared that out of our complement of thirty-two hands, there were only two that could steer. Our captain had gone ashore; he was now sent for express; police-officers were to be procured; the refractory sailors were forthwith to be sent to jail, and their places to be filled up by others from Plymouth. Here was a plentiful crop of troubles, all leading to the conclusion that sailing was out of the question at present. It seems that the Jews in London have almost a monopoly in supplying vessels with men: that these people are in the habit of furnishing sailors, on their first reaching shore, with money in small sums, and with slops, as their wearing apparel is called, and so get a hold upon them;—and they, finding themselves inextricably in debt to these grasping extortioners, are glad to get employment through their means. These Jews repay themselves, out of the men's first advance of pay, at an usurious rate, leaving the poor fellows scarcely a choice, and forcing them into any ship they may have contracted to man. In this way men are taken on board without any investigation as to character, and of course often turn out, as they did in this case, most troublesome and worthless. It already appears to me, that there are many alterations which should be made in the arrangements regarding emigration. No vessel ought to be allowed to carry above two hundred emigrants, even if she be of six hundred tons burthen: morals, health, and safety, all require this. We are two hundred and nineteen, exclusive of the officers and crew; in all two hundred and forty-nine souls, and the vessel is only of five hundred and eighty-four tons burthen. The ship is overcrowded, the sailors have berths under the forecastle, not fit for human beings to inhabit, and not even watertight. One surgeon in an emigrant-ship is not sufficient: he ought to have an assistant. Were the one medical man to be taken ill whilst disease was on board, fearful indeed would be the state of the helpless passengers. In truth, every thing connected with emigration ought to be entirely under the control of government. If it pays individuals so well, as we know it does, it would pay the government also, and probably still better; and even if it did not, the crown owes it to its subjects removing to a different part of the realm, for the general good, to take care that no private interest shall benefit at their expense and to their detriment: there would then be a responsible party, and public security that matters would be properly managed, as respects suitable provisions, medical attendance, the trustworthiness of the vessels, the sufficiency of their crews, punctuality in the time of sailing; and also that the accommodation was sufficient to afford those necessary subdivisions that decency and health imperatively demand. It is perfectly well known, that even with a properly limited number of passengers, twelve pounds per head would provide wholesome food, and every necessary. Mr. M. the agent of the Lady Kennaway, receives nineteen pounds from the colonial government, and five pounds from the individual going out as an emigrant, or from his master when he goes out as a servant—in all twenty-four pounds! There is ample room here for a great public saving, and great necessity for a careful examination into the whole matter."*—"A few days is sufficient to convince any one that an emigrant-ship is a hotbed of iniquity. The women told of this man, it is true; some well-conditioned there will always be in every community; but there are numbers in this vessel who would corrupt the purest mind; and the greatest error ever committed by a people is, the encouragement permitted by the colony of New South Wales to the importation of the very dregs of society. We are informed by the officers, that there are many women of the very worst description on board. Common law would warrant very strong measures, and in such circumstances it ought to be stretched to bring within it all moral delinquencies. I much fear, that the evidence of Sir F. Forbes and Major Mudie before the committee of the Commons will be verified in this ship before we separate: and that there are those amongst us that were past all redemption in morals before they came on board, and who, instead of benefiting the country of their adoption, as wives or servants, will disgrace it, as they have already done their native land."

* We may notice that the causeless use of initial letters for names is a considerable drawback upon the interest of this volume.

The supply of provisions is stated to have been abundant and good. Scarlet fever and hooping-cough among the children carried off several, two men were lost overboard, and other dangers and accidents occurred; but after a four-months' voyage the vessel arrived in safety at Sydney. A sketch of the history of New Holland may here be left *in statu;* and it must be owned that even from Oxley, Cunningham, Wentworth, Sturt, Maxwell, and other writers, a *general* history could not be expected where "nothing is at present known with regard to the interior: beyond about four hundred miles from the sea, it is at present a complete *terra incognita.*" The following notes may nevertheless be read with interest as applicable to existing circumstances:—

"Port Philip, Adelaide, and Swan River, have their interested supporters. Where the treasure is, the heart will be also, and with some the 'praise and preference' too, until they succeed in persuading some young and inexperienced speculator to step into their shoes, and avail himself of all the beauties and advantages they so highly extol. These are the only British settlements on the southern coast; St. George's Sound and Portland Bay are, properly speaking, merely names of districts; and no foreign power has any settlement from Cape Lewin to Torres Straits. On the eastern side of Australia, Moreton Bay, up to the present time a penal settlement, is about to have that stigma taken from it, and to be thrown open for purchase and settlement; and I entertain a strong conviction that its climate, navigable river, and tolerably safe anchorage in the bay, as well as the excellence of its soil, and plentiful extent of river frontages, will secure its success, and that it will soon rise into very great importance. The mulberry, the cocoa, and the tobacco plant, would all thrive there; and I predict, with confidence, that this will ere long be the field of enterprise of future emigrants to New South Wales." In Sydney there are "very fine specimens of our kind to be seen, above the average height, and with well-proportioned frame; though it is remarked, that tall, well-made men, who have been born in Australia, do not possess that muscular power which is found in Britain generally to accompany similar proportions. The features are, I think, better than those of the English: the eye is generally black in both sexes, the nose rather Roman than Grecian, and finely formed, and the whole expression sharp and good. On hot days, the white dress, very generally worn by all classes, gives a lightness and gaiety to the streets that is very striking. Few ladies are to be seen walking in the public streets: it is not the custom; and this, I confess, is a great drawback to the general appearance of the place. But the truth is, prudence, as well as that first of female attributes, delicacy, have rendered it necessary in Sydney. I have not yet seen what I should call a fine woman among the native ladies of Australia, the currency lasses, as they are termed."

In Australia, Mr. Hood had an elder son previously located, if not settled, in farming there; and the family were united in the bush. The despondency and distresses of the colo-

nists are described in painful language; but Mr. H. himself is inclined to consider them temporary evils, and to look forward with golden hopes when American traffic and English manufactures revive! Yet he tells us:—"The more I see of this country, the more I am at a loss to form an opinion regarding it. There does seem a curse upon it at present, judging from the awful droughts to which it has been subject from its first discovery: the first was in 1791, and they have since happened pretty regularly every seven or ten years; 1827, 8, and 9, were dreadful years; little or no rain fell in 1837, 8, or 9; and in 1840 and 1841, in most parts of the colony complaints have been general. The fall of prices, the increase of expenses from the scarcity of labour, the want of public markets, the insecurity of property, the difficulties of realising property when necessary, from the scarcity of money, the almost complete impunity with which crimes are committed, the impracticability of procuring evidence of deeds done in this thinly peopled country,—these, and many other evils, render it a difficult and serious matter indeed to point out the right and prudent path for a settler to pursue; and the task is rendered still more arduous by the fact, that almost the whole of the country in this district worth possessing is already occupied. This want of country is one of the most serious bars, as it appears to me, in the way of the future advancement of the colony. The idea of the settler not finding ample room in so immense a country as Australia may at first seem absurd; but many things are required to form what is called 'a desirable run.' The feed must be good; the water must be in sufficient quantity not to fail in dry seasons; there must be a passable country betwixt it and Sydney; the land-carriage must not exceed three hundred miles at the utmost, or there must be good water-communication with the metropolis. Now a very considerable part of the known country where these requisites are combined is already occupied; and without these no station is worth having. No one taking a station would wish it less in extent than would be sufficient for five thousand sheep at the least, and from that to twenty thousand, with a proportionate number of cattle—say from three hundred to a thousand. From the information I have been able to obtain, such stations must now-a-days be bought, and not selected; and, in these times, purchasing becomes an affair of grave consideration." "It will scarcely be believed in England, that the estimated number of sheep which have died within the last twelve months in the colony, from catarrh and drought, is seventy thousand!!—that colonists are compelled, in order to save the dam from starvation, to cut the throat of her lamb—that no means are adopted for securing a stock of lambs for next year—or that a stockholder would offer 8,000 sheep to any one that would remove them from his runs; and finding that no one could be prevailed upon to taint his own flocks by accepting so dangerous a present, had recourse to consuming them by fire! and had actually killed and burnt two thousand. Such things are nevertheless perfectly true."

Rum-drinking is described as a prevailing vice in the country, and the ruin of half the population:—"Every inn in this country has a tap attached to it, where the lower classes are to be seen day and night spending their earnings. Such is the extent to which drinking is carried, and so totally reckless of money are the lower classes of bushmen, that, to avoid the trouble of nightly settling their score, they have been known to place large sums of money in the hands of publicans, with a request to be told when it was expended!—and bucketsful of Devonshire cider, under the name of champagne, quickly raise the bill to the desired amount."—"There is something peculiar to the country that causes the ear to fall, even when the crop is cut for green fodder, in sufficient quantity to produce a second and even a third crop. They, of course, lessen in quantity as well as in quality, and I have no doubt there would be more profit if the usual process were resorted to. Two or three ploughings, I see, are given to land intended for wheat, which is the only breadcorn in Australia. The seed-time is from March to June; the harvest in November and December. Thus there are two seed-times and two harvests each year in this favoured clime. Oats and barley are sown and reaped in the same seasons as wheat. Maize will produce on an average fifty or fifty-five bushels to the acre; and wheat will give twenty-five bushels of sixty pounds weight; of course these quantities and weight must vary with culture and soil, but they may be taken as the average. Lucerne is now grown in many parts of the colony, and is esteemed excellent food for horses; it is, however, generally mixed with green oats, which, I have already stated, are the common fodder of the country. The potato yields two crops in the year in the lower districts of the country; so readily do the soil and the climate second the industry of the settler."

We are surprised to see that Mr. H. counts cannibalism as among the *vices* of the aborigines. Of their religion he says:—

"Their religion is very singular: they worship no idol, nor have they any religious ceremonies whatever. With regard to futurity, they have very peculiar views. They conceive the whites to be reanimated beings, who, in a former state of existence, had been the ancestors of their race. They believe, also, that white men never die, but that the blacks die and become white men and masters. A gentleman told me that his servant was thrown into great perplexity one day on being told that his master must die, saying, 'Bel you die, sir? white fellow never die.' I have not heard of their believing in a good spirit, but they believe in a bad one, that does all the evil that happens, and kills the young children. It is alleged that this last doctrine is professed to cover their own delinquencies towards their female offspring. Their name for the spirit of evil is 'debbil-debbil,' evidently a corruption of the white man's devil. There has been no census or correct estimate of the blacks; but from comparing the births and deaths in different known tribes, there is every reason to believe that the latter are the most numerous. Disease, unknown, it is said, before the arrival of the white man, has augmented the mortality; and the half-caste children are often murdered. There is no law amongst them against murdering their own families or relations, while the murder of those not related is forbidden; and thus revenge to the death is common at the hands of the nearest relative."—"The most striking feature of this country is the universal extent of forest; and there are some circumstances connected with it that may not be generally known. Among the many peculiarities of the Australian forest is the brittleness of some of its timber. Before rain, trees frequently fall, without any warning; and in the slightest wind, gum-trees of the largest dimensions are levelled to the ground in every direction. No one builds a cottage without clearing away all the large trees near the spot, lest they should crush it in their fall. Throughout the unbounded forests of Australia one sees living and dead trees mingled together, and often as many prostrate as erect."—"One dreadful feature of the forests of Australia is, that they do not furnish a single plant or blade that will sustain human life, nor any wild fruit;" so that persons who lose their way are sure to perish miserably. Mr. H. seems to think that the camel might be introduced into Australia with great advantage. Into the question of human immigration we shall not enter; but may quote the following curious list of statistics for marrying men:—

"Suppose the whole population of Australia were now grown up, and wished to be married, out of every hundred bachelors only forty-one could find wives. Supposing all the unmarried males now of age wished to be married, out of every hundred only eleven could find wives. Supposing all the free bachelors now in the colony wished to be married, out of every hundred only eight could find wives! As there are at present in the colony 66,366 unmarried males, and only 26,007 unmarried females, it follows, that before every son of Adam could be provided with a daughter of Eve, there must be introduced no fewer than 40,359 unmarried daughters!! The authority from whose tables I quote, and whose permission I have to do so, makes the following just and sensible remark thereon:—'That such a deficiency is one of the greatest evils that can befall a community, being not only a check to its advancement from the natural increase of the species, but prejudicial in the highest degree to its domestic, social, and moral welfare; and that, unless the evil be left to the slow remedy of time, by the dying off of the superfluous males (may not the females die and keep up the disproportion?), a copious introduction of female immigrants for many years to come offers the only means by which the balance of the sexes can ever be adjusted.' I am inclined to think that this state of matters has been brought about fully as much by emigration as by transportation, though for every one hundred male transports there were only seventeen females. Latterly it has been an understood regulation that every ship must have an unmarried female for every unmarried male; but this was not originally acted upon, nor was any attention paid to the sexes of the children; and at the termination of the first half-century of this colony's existence, a supply of 50,000 unmarried females would scarcely have satisfied the demand in the matrimonial market."

With this we shall conclude what we have to say of Mr. Hood's literary labours; leaving the politics, revenue, banking, education, trade, press, religious parties, and grazing, and the production of wool, the grand staple of the country now and henceforward, to be carefully studied by all who are interested in the important results connected with these questions.

The return home presents us with nothing sufficiently new for illustration; and we therefore take leave of our sensible author, wishing him health and prosperity in his own and his family's concerns, both on the banks of the Tweed and the Paramatta.

Martin's Vagaries: being a Sequel to "A Tale of a Tub." Pp. 48. A. H. Baily and Co.

SWIFT had no George Cruikshank to illustrate him; but he made so clever a tale of it without, that even with it is a bold attempt to follow him. Not to have failed, indeed, is a great

praise, and we can fairly bestow it on this *brochure*, the object of which is to ridicule the approaches of Puseyism to Romish ceremonies. There is a good deal of humour in the *Vagaries*, and there is no acrimony. The style of the Dean is generally well imitated. Thus of the documents found at the bottom of the tub it is averred: "Hitherto I do verily believe the genuineness of the papers themselves has never been questioned; lest, however, the public should be abused by the insinuations of conceited sceptics, who profess to admit nothing but what they can understand, and whose credulity accordingly is chargeable with no very extended range, it may be well to anticipate all possible objections. The most dangerous sophism likely to be raised, and against which I would more especially guard the reader, is 'that as many of the events recorded or alluded to in this 'second part' have taken place subsequently to the death and burial of the author of the first part, it necessarily follows that the two must have been written at different times and by different hands.' But I submit this, plausible as it appears, is nevertheless unsound reasoning, and contains a manifest error or fallacy, called by logicians *petitio principii*; that is, begging the question."

And the *lectori salutem* thus concludes:—"Of myself I need say nothing, but shall without further delay submit the following pages to the judgment of the impartial reader, bidding bidding him, in the words of the modest translator of *Burgursdicius*—'Read it with diligence and candour, and whatsoever he findeth in it either profitable or delightful—to the author be the glory—him the advantage—' VALE.

"— Coll. Oxon, Kal. Jul. 1843."

Martin is represented as having become rather idle, addicted to field-sports, and other pastimes, and consequently to have got into trouble:

"Brought to his senses by so serious a mishap, Martin abruptly concluded the crusade, abandoned hot luncheons, took to a more wholesome diet, and permitted people to live as long and look as disagreeable as they pleased. Peter and Jack, too, also came in for their shares of his good offices; and to do them justice, they began gradually to moderate their angry transports, and to shew something approaching civility to their brother, especially at such seasons when there was any thing to be got. In behalf of the former, he procured a reversal of the warrant out against him, and a renewal of his protection; and further was at the cost of building for his convenience a pleasant little *studio** at the western part of the kingdom, furnishing the same with a yearly allowance of pens, ink, books, paper, and sealing-wax, all of which were received with proportionate gratitude, and an immediate demand for tapers, canes, and penknives. As for Jack, reading, writing, and arithmetic, were quite below the notions he had formed of true gentility; his great delight was to run howling and tearing through the country, picking up a subsistence as he could among the poorer sort of people, whom, partly by threats, partly by promises, he cajoled out of their peace as well as their pence. And this, through the over-indulgence of Martin, he was permitted to do to his heart's content, without let or hindrance from any mayor, sheriff, constable, bailiff, or bull-dog whatsoever."

Martin turns over a new leaf, sends out missionaries to the colonies—"companies of labourers and foremen, who might fence and drain, plough, harrow, and manure, all these outlying bits. It is difficult to determine with exactness the degree of profit resulting from these speculations. The workmen, whose equipment, by the way, cost Martin a pretty penny, spoke confidently of their 'successes under the blessings of Providence,' and most heartily congratulated their master on the promising state of the sown lands, and the healthy condition of the crops; there were, nevertheless, not wanting ill-natured persons who affirmed that many of these worthy individuals spent rather too much time in making and compounding egg-flip with the cottagers' wives; hinting furthermore that the increase of produce was confined mainly to the live stock. Be that as it may, Martin honestly believed that he was doing a great deal of good, and no doubt he was in the right. Indeed, it would have been well had he confined himself to the improvement and cultivation of his estate; but when once the spirit of reform takes possession of an individual, it is no easy matter to find a safety-valve at the proper moment; and for one step of sound policy it induces him to take, it hurries him into three that had better been avoided; and so it fell out with Martin, for as ill-luck would have it, he came plump one day upon a large pier-glass, which a principal person in the parish had lately procured as an ornament to his drawing-room. 'What!' says he, mightily astonished at his figure, 'is it possible!—can this be I? What a hat!—what linen!—what boots!—and stockings that even my brother Jack would be ashamed of—did he condescend to wear any.' The next morning, our hero made his appearance in a bran new beaver, with a rose stuck jauntily in the band, a cravat of spotless white, and hose and shoes of the most courtly fashion. 'Why, hilloa!' exclaims an acquaintance, 'where didst thou get such a fine hat, friend Martin?' '*Master* Martin, if you please,' says he, gently interrupting him. '*Master be* ——,' quoth the other, and went his way whistling. But the fit was on, and Martin was not to be put down by a whistle. 'He pretends to dislike my hat,' says he, 'does he! a low vulgar rascal. We will see what he is pleased to say to my smallclothes.' 'Accordingly, on the following Sunday, Mr. Martin's inexpressibles formed the topic of conversation in all the polite circles in the parish. 'This,' quoth he, with much complacency, 'will do; and, unless I am mistaken, my old flame, Mad. De Grands Titres, bestowed encouraging glances upon the improvement of my figure; and, after all, 'tis but a duty we owe to society and ourselves, to fall in as near as may be with the prevailing mode.'"—"And here it is fit, in the first place, that I should speak of a certain new sect which, under the names of Novelists or Tabbies, sprung up about this time, and whose system exercised considerable influence upon the proceedings of our hero. As the Œolists, or windy philosophers, it will be remembered, owed their existence to Jack, so did the Novelists, or wet philosophers, derive their origin from Martin. The former, as has been shewn, referred all things to their first principle, wind; and in like manner, the latter maintained that all things were to be preserved, amended, or obliterated by their *primum mobile*—water, or to speak more accurately, *ιχωρ*, or, as some have it, *ιωχωρ*. In this fluid, they contend, which, under various forms and in various combinations, pervades the whole extent of the universe, consist the true principles of life and immortality; that to this alone the philosopher owes his learning, the poet his imagination, the statesman his statistics, and the man of fashion his long bills; that deprived of it we should have neither divines nor lawyers, physicians nor historians; that man himself would become little better than a locomotive cauliflower; that the accounts of creation would be for ever confused, and all nature plunged into everlasting bankruptcy."—"It followed, as a consequence of these dogmas, that he should be held in greatest esteem among the members of the sect who could produce and employ the largest proportion of this divine *ιωχωρ* accordingly, there was no small emulation among the doctors as to who should furnish to the world the greatest number of sheets of paper impressed with this token of superiority. Does a shoe press disagreeably upon any particular corn, out pops a pamphlet announcing the interesting circumstance to society. Does the dinner of the preceding day lie undigested upon the stomach, Letter 81 startles their disciples with the intelligence. Are they pinched and confined in their lower garments, straightway the tailor is held up to public indignation in 'Thoughts on S—pt—n.' Do their minds become unsettled or their bodies bilious—the very streets are flooded with torrents of remains, reviews, discourses, and addresses to my lords the bishops. In a word, according to them, this fluid is the universal solvent; the philosopher's stone, the *elixir vitæ*, the *arcanum magnum*, the *το αριστον*, containing within itself the mighty secrets of the longitude and the quadrature of the circle; all things, they maintain, spring from and are reducible to *ιωχωρ*, and as, without doubt, the world has in the first instance been written up, so in due course of time it will as certainly be written down."

But we have done enough to shew the character of this little work, and leave its more argumentative matter to interested parties and casuists.

History of Letter-Writing from the Earliest Period to the Fifth Century. By W. Roberts, Esq., Barrister at Law. 8vo, pp. 700. W. Pickering.

THIS massive tome is full of learning and research; too full, we fear, for popularity in these days, however much it may be prized by the judicious few who continue to regale on more solid literature. After briefly referring to Cicero, Pliny, Libanius (the preceptor of the Emperor Julian), and others, who have either left examples or precepts as regards the proper epistolary style, Mr. Roberts says:—"I certainly so far agree with the prevailing doctrine on this subject, as to think that letters must be natural, to be good for much. It is not necessary that they should be light or sententious, sprightly or severe, rambling or methodical. Their excellence rather consists in their affecting nothing, dissembling nothing, imitating nothing;—in their fidelity to the feelings; in their character of genuineness; in a complexional rather than a conventional humour; in an eloquence of expression, borrowing little from without, but sparkling and racy from the fountains of thought and sensibility. The play of a letter should be natural, its wit unconscious, and its vigour involuntary. In a real good letter there should be something vital, something in accordance with a healthy pulse of sentiment, something belonging to the interior man, as he stands affected by passing events, or his own experiences and recollections. But letter-writing has its laws; and it is one of its laws that nothing dried or laid up for use should find admission; its fruit should have upon it the bloom of our youngest thoughts, and a maiden dew should be upon its leaf. In the best letters we find a certain *naive* and arch use of language, in which images are made to

* "The College of Maynooth."

play before the fancy of the reader, without the formality of decided similitudes or figures, giving a secret but a lively flow to the current of composition. To know the mystery of these happy combinations is the talent and tact of the initiated alone. These, however, are the secrets of familiar writing, and especially of letters, as they form a part of polite literature. They defy imitation, and refuse to be transplanted. They are delicacies which will not bear handling,—felicities which seem to come of themselves, while they mark the perfection of skill."

We fancy this quotation to be a sort of specimen of the required character in letter-writing; rather ornate, perhaps, but what the writer would commend as a pattern. In speaking of his design, he states:—

"To the letters of the wisest and most accomplished heathens I have added pretty copious specimens from the fathers of the evangelical Church, of the fourth and fifth centuries; in whose epistolary intercourse there will be found matter of the gravest import, and the fullest exhibition of a class of men, whose habits of thought and expression were framed after a model entirely different from that which furnished the standard of heathen morality: and the present is, perhaps, a juncture in which that portion of this work will be found especially interesting."

The first stone also is thus laid:—

"In tracing the history and origin of letter-writing, we shall in vain look for any certain date. The honour of the invention has been given to Atossa, the daughter of Cyrus; married successively to Cambyses and Darius Hystaspes, by which latter prince she became the mother of Xerxes. The authority for this supposed fact is the testimony of Hellanicus, a general historian of the dynasties and catastrophes of ancient states, including that of the Persians, whose works are lost, and who seems to have lived till about the beginning of the Peloponnesian war. The fact as recorded by Hellanicus is preserved by Tatian and Clemens Alexandrinus. Tatian in his celebrated Oration against the Greeks, a work which has come down to us, contends that none of those institutions of which the Greeks were so boastful had their origin with them, but were all invented by the Barbarians: and, according to this author, it was said by Hellanicus, that a Persian queen, whose name was Atossa, first composed epistles; which statement is copied by Clemens Alexandrinus."

We trust our readers will not feel disappointed if we stop here, and recommend to all who wish for full information on the subject, elucidated by many very curious and interesting letters, to refer to the work itself. There they will find what epistolary correspondence was in scriptural ages and the period of Homer—the history of writing materials, forms, and conveyances—Greek and Roman letter-writing; and, finally, examples from the fathers of the Church. We are tempted to copy some passages from Sidonius Apollinaris, residing at the villas of two of his intimate friends, in a letter to his friend Donidius, and affording a striking picture of the manners and habits of the last days of Rome in the west, the latter half of the fifth century. His first reception is by Ferreolus, a man of prefectorian rank, and we are told:

"We were hurried from one luxurious entertainment to another. Hardly had we passed the threshold, when, behold, regular matches of tennis-players, within the rings or circular enclosures, and the frequent noise and rattling of the dice, with the clamours of the players! In another part were placed such an abundance of books ready for use, that you might suppose yourself in the libraries of the grammarians, or among the benches of the Roman Athenæum, or the furniture of the shops of the booksellers. These means of entertainment were so disposed, that the books of a serious character were placed near the seats assigned to the matrons, while near the benches of masters and fathers of families such compositions were ranged as were in esteem for their Latin gravity and tragic elevation; though these volumes, the productions of various writers, might all possess an equality of merit on subjects very different; for men of like intellectual rank were mingled together: here Augustin, here Varro, here Horace, here Prudentius, caught the eye of the reader. Among whom Adamantius Origenes, as interpreted by Turranius Ruffinus, was submitted to the inspection of the serious readers professing our faith; so that the maintainers of the different opinions on this subject might discuss the grounds upon which some of our greatest divines have condemned this interpretation as a very sinister performance, and to be altogether avoided, although it was so exact a translation of each word and sentence, that neither Apuleius nor Tully had more faithfully executed, the one the Phædo of Plato, and the other the Ctesiphon of Demosthenes, as a rule and model for Roman elocution. With these studies each of us occupied himself as he pleased, until a messenger from the chief cook reminded us that it was time to think of taking care of our corporeal part: which messenger, marking the time by the clepsydra, came very punctually at the fifth hour (11 o'clock). Dinner was soon dispatched, after the senatorian custom, according to which a copious repast is served up in few dishes, although the banquet consisted both of roast and boiled. Little stories were told while we were taking our wine, which conveyed delight or instruction, as they happened to be dictated by experience or gaiety. We were decorously, elegantly, and abundantly entertained. Rising from table, if we were at the villa called Voroangum, we retired to our apartments to get our necessaries from our packages. If we were at Prusianum, the other villa, we turned out Tonantius and his brothers, some very select young men of quality of the same standing, to make room for us and our furniture. Having shaken off our after-dinner nap, we amused ourselves with a short ride, to get an appetite for our supper. Neither of our hosts had their baths completed for use, though each was constructing them. But after the train of servants and attendants which I had brought with me had a little respite from their cups, whose brains were somewhat overcome with the hospitable bowls of which they had freely partaken, a sort of pit was dug in haste near a rivulet or spring, into which a quantity of hot bricks were thrown, a circular arbour being made over it by the intertexture of the boughs of willows or hazels, by which the place was darkened, and air at the same time admitted through the interspaces, while a hot vapour was sent through the willows. Here an hour or two passed in the midst of much wit and merriment, during which we were all thrown into a most salubrious perspiration, being enveloped in the steam as it came hissing from the water. When we had been suffused with this long enough, we were plunged into the hot water; and being well cleansed and refreshed, we were afterwards braced by an abundance of cold water from the river or fountain. The river Vuardus* runs between the two villas, and except when it is thickened and discoloured by the influx from the snow on the neighbouring heights, it is a transparent and gentle stream, with a pebbly bottom, nor on that account the less abounding in delicate fish. I might go on to give you a description of our suppers, which were sumptuous, did not my paper put that stop to my loquacity which modesty does not; of which, however, I should have been much pleased to give you an account, were I not ashamed to blur over the back of my paper with my ink. Besides which we are on the point of starting, and we please ourselves with the hope of soon seeing you again, if God permit; and then we shall best commemorate the suppers we have had with our friends in the suppers we shall exchange with each other, only let a complete week first elapse to bring us back to our appetites, after this luxurious banqueting; for a stomach surfeited by luxurious fare is repaired by nothing so much as by stinting it for a time."

Upon this the author justly remarks:—"The letter presents an image of more ease and cheerfulness than might have been expected to exist at a time when the Roman empire was falling to pieces, and successive incursions of barbarous and unknown enemies were shaking to their foundation the elements of society. But there is a tenacity in the habits of civilised life, and an exigency in its usages and reciprocities, which sustain it in being and operation, amidst all the casualties and revolutions to which civilised communities are exposed; and thus in the last catastrophe of Rome, with Goths, and Vandals, and Visi-Goths, at her gates, and trampling on her provinces, we find the bishop of Arverne and his friends, at a retreat among the mountain-passes, enjoying all the pleasures of the festive board, and as happy as good cheer and hospitable friendship could make them."

After us the deluge seems to have been their motto; and who shall say they were entirely wrong?

* "This river runs through the country of the Volcæ Arecomici into the Rhone, once famous for a Roman bridge and aqueduct, of Roman structure, of which it is said some traces may yet be seen."

Practical Remarks on Gout, Rheumatic Fever, and Chronic Rheumatism of the Joints; being the Substance of the Croonian Lectures for the present Year, delivered at the College of Physicians. By Robert Bentley Todd, M.D., F.R.S., &c. 8vo, pp. 216. London, J. W. Parker.

THE author, at starting, affirms that rheumatic fever and gout are diseases of the blood, which involves what we are not prepared to grant, that the blood has life; for otherwise it cannot be diseased. It may be the means of disseminating, as a vehicle, diseases of the solids; and it may contain within itself, by imperfect nutrition or abnormal chemical changes, the germs of disease; but it, as a fluid, cannot be itself diseased, unless it possesses the same vitality or principles of decay and regeneration as belong to the solid parts of the human body. The author, however, perhaps himself means by blood-diseases such as take their origin in the blood, and not diseases of the blood itself; at least, his definition of *true blood-diseases*, as being those in which a morbid matter is generated by an abnormal chemical action in the blood itself, asserts no more; and we are perhaps misled by the expression "diseases of the blood," the subject being in a state of obscurity with regard to this leading point, which would scarcely have been expected from

an author so eminent as a physiologist, and so particular in his wish to be philosophical in all that he writes and says.

All such blood-diseases, according to the author, exhibit certain characters in common; and these are chiefly febrile disturbance, pains in the limbs and joints, and vitiated secretions and excretions. The exanthemata, taken as an example, however, arise from the presence of a morbid matter in the blood, but not from disease of the blood. Syphilis certainly bears more the character of a blood-disease; but this has never been satisfactorily demonstrated. It is certainly not brought into the constitution by the blood-vessels, but by the lymphatics; and the morbid phenomena which result from its absorption into the blood may, like cancer and other malignant diseases, be just as much the result of the dissemination of a certain poison or morbific matter by the fluids, as of any diseased action entailed by their presence in the blood itself. With regard to lead-cholic, diabetes, and other diseases of that class, more particularly Bright's disease, it is unnecessary to argue the same thing; for the author's statement is only, that they are examples of diseases, many of the symptoms of which are attributable to a morbific matter circulating in the blood.

But, supposing that the author wishes to comprise no more than the revived humoral pathology of the day, as advocated by Drs. Holland, Webster, Wilson, and others, in his theory of blood-diseases, we might still urge that the comparative fitness of blood for spontaneous coagulation or organic change has not been proved to lie in the blood itself, but rather to reside in the relations established between it and the vital action residing in the solids; and further, that this doctrine of diseased blood is by no means supported by the Liebigian doctrines, whose author states his views (p. 27) as follows: "When those substances are wanting whose function in the organism is to support the process of respiration; when the *diseased organs* are incapable of performing their proper functions of producing these substances; when they have lost the power of transforming the food into that shape in which it may, by entering into combination with the oxygen of the air, protect the system from its influence; then the substance of the organs themselves, the fat of the body, the substance of the muscles, the nerves, and the brain, are unavoidably consumed." The fact is, that if we admit even the humoral part of the theory,—without going so far as the conservative and destructive principles of Liebig, founded on the relation of oxygen to the blood,—air, exercise, temperature, water, and food, would be the only authorised means of preserving health and curing disease; but if the solids are diseased, and not the blood, then we may have recourse to drugs of known efficacy, as more immediate and more decided in their operation than the slower agency of baths and ablutions. Dr. Todd argues that gout is not a disease of the solids, but of the blood (p. 61); yet he himself acknowledges (p. 58) that it does not originate in the blood, but "is always at first connected with defective assimilation and imperfect excretion: two conditions eminently calculated to impair the quality of the blood, by introducing into it some abnormal element on the one hand, and obstructing the elimination of some principle which is usually excreted from it, on the other." This latter statement, or that there is a morbid ingredient in the blood, we are ready with Dr. Holland to admit; for nothing—from the various phenomena accompanying it, more especially the deposits of lithates of ammonia and soda in the solids—can be more certain than that there is, during *this disease of excretion and secretion*, an abnormal condition of the blood, in which it circulates principles injurious to the functions of organism or to life, but which apparently, according to the temperament, may terminate either in a solid or fluid product.

It is to be observed here, that only one indication in the treatment of gout so defined can be obtained by the hydropathic means. They are, 1st, to obviate the undue formation of free acid in the stomach, which water may dilute, but cannot neutralise—that is, if pure; 2dly, to promote the elimination of gouty matter through the various excretions, which the hydropathic means can undoubtedly effect; and 3dly, to obviate the tendency to the formation of lithic acid, which can only be accomplished by reference to diet, very naturally, however, included among the *means* of hydropathists as well as allopathists; of homœopathists we will say nothing, as diet is the only foot which they have to stand upon. Dr. Todd lays some stress on his first making general the fact of the paroxysm of gout appearing in low states of the system; but Dr. Dickson has admitted the same thing when he views it as an intermittent disease having its low or remittent stages. (*Fallacies of the Faculty*, p. 137.) In fact, our author having admitted acute rheumatism to be rheumatic fever, as is done by Dr. Dickson and Dr. Holland, he might also have made a greater step by discarding the term gout (the more especially as he characterises all blood-diseases by febrile action), and using a significative term, such as lithic acid fever, or any other, which determined that gout, rheumatism, &c., being fevers, how each of the fevers is distinguished from the others; and this is evidently what we shall soon come to. The author admits (p. 142) that rheumatic fever is not to be distinguished from gout fever, except by the deposits of lithate of soda; this is of high importance in the treatment, but in the natural history of disease it only points out that they are the same fevers, the one with, the other without, certain deposits. But while there is no neutralisation of acids by soda and ammonia, there is excess of lithic acid (p. 142); and the doctor's theory of rheumatic fever (p. 143, *et seq.*) is that of an imperfect assimilation and vicissitude of temperature, and an undue development of free acid. Here we must terminate. We have indeed been rather medical in this notice; but the importance of the subject demanded it. It is obvious that it is by such works as these, and such discussions as these, that science is really benefited. The progress of animal chemistry, and its relations to pathology, will, within a very brief time, cast out much rubbish from the theory of medicine and the nomenclature of diseases. Dr. Todd, to say the least of him, is a young physician who is marching on with the progress of events, albeit scarcely bold enough to take a lead in them. This is probably, however, a good deal in deference to his professional brethren; for it is evident that he must, from his pathological views, see the incompatibility of his nomenclature with his doctrines. It has been said that nothing will so soon help a man to a chariot as to write a book with gout for its title; but we hope some one will prefer the chariot of fame, and write a book in which

> "The merest word that ever fooled the ear
> From out the schoolman's jargon!"

shall be entirely exploded.

Proverbial Philosophy: a Book of Thoughts and Arguments, originally treated. By M. F. Tupper, Esq., M.A., Oxford. Second Series. Pp. 315. London, Hatchard and Son.

This work is so strange that we know not what to make of it. If we grant it thoughtfulness and originality, we must add that it is quite extraordinary in form and style, and contains many startling as well as striking propositions. The divisions are various; such as cheerfulness, to-day, to-morrow, authorship, flattery, life, death, ideas, names, &c. &c., and all are discussed in an axiomatic and scriptural manner. Thus, for example, from some dozen pages on authorship, we quote the opening:—

"Great is the dignity of authorship: I magnify mine office;
Albeit in much feebleness I hold it thus unworthily.
For it is to be one of a noble band, the welfare of the world,
Whose haunt is on the lips of men, whose dwelling in their hearts,
Who are precious in the retrospect of Memory, and walk among the visions of Hope,
Who commune with the good for everlasting, and call the wisest, brother,
Whose voice hath burst the Silence, and whose light is flung upon the Darkness,
—Flashing jewels on a robe of black, and harmony bounding out of chaos,—
Who gladden empires with their wisdom, and bless to the farthest generation,
Doers of illimitable good, gainers of inestimable glory!
We speak but of the Magnates, we heed none humbler than the highest,
We take no count of sorry scribes, nor waste one thought upon the groundlings;
Our eyes are lifted from the multitude, groping in the dark with candles,
To gaze upon that firmament of praise, the constellated lamps of learning.

* * * * *

Rare is the worthiness of authorship: I justify mine office;
Albeit fancies weak as mine credit not the calling.
For it addeth immortality to dying facts, that are ready to vanish away,
Embalming as in amber the poor insects of an hour;
Shedding upon stocks and stones the tender light of interest,
And illumining dark places of the earth with radiance of classic lustre.
It hath power to make past things present, and availeth for the present in the future,
Delivering thoughts, and words, and deeds, from the outer darkness of oblivion:
Where are the sages and the heroes, giants of old time?
Where are the mighty kings that reign'd before Agamemnon?
Alas, they lie unwept, unhonour'd hidden in the midnight:
Alas, for they died unchronicled: their memorial perish'd with them.
Where are the nobles of Nineveh, and mitred rulers of Babylon?
Where are the lords of Edom, and the royal pontiffs of Thebais?
The golden Satrap, and the Tetrarch,—the Hun, and the Druid, and the Celt?
The merchant-princes of Phœnicia, and the minds that fashion'd Elephanta?
Alas, for the poet hath forgotten them; and lo! they are outcasts of Memory;
Alas, that they are wither'd leaves, sapless, and fallen from the chaplet of fame!
Speak, Etruria, whose bones be these, entomb'd with costly care?
Tell out, Herculaneum, the titles that have sounded in those thy palaces,—
Lycian Xanthus, thy citadels are mute, and the honour of their architects hath died;
Copan and Palenque, dreamy ruins in the West, the forest hath swallow'd up your sculptures;
Syracuse, how silent of the past! Carthage, thou art blotted from remembrance!
Egypt, wondrous shores, ye are buried in the sand-hills of forgetfulness!
Alas, for in your glorious youth Time himself was young,
And none durst wrestle with that Angel, iron-sinew'd bridegroom of Space;
So he flew by, strong upon the wing, nor dropp'd one failing feather,
Wherewith some hoary scribe might register their honour and renown."

Though rather repelled by the medium, there is no doubt of the poetical beauty and reflective

power of many of these ideas and lines. The imagination is encouraged to transgress bounds, and the want of regulation is obvious. There is often a dreaminess about the language; and it is difficult to say exactly what is extravagance and what genius. But a high sense of religion purifies the whole; and, though we are free to predict that it is a book which no living soul will ever read from beginning to end, we are equally confident that it is a book which, once dipt into, every intelligent person would wish to preserve for the sake of dipping again a hundred times, and pondering on the passages thrown forth by a singular mind for the world's consideration.

Polylogy: a Dual-line Version of some of his Paraphrases of Wisdom and Learning. 2 vols. T. and W. Boone.

It is a pleasure to review a book which there is no understanding. We cannot call it a *mono*mania, we suppose, for every passage is in *two* lines; and the author assures us, that he has condensed the "essential extracts of huge volumes" into these "dual-lines," which the reader may, if he can, expand into their original diffuseness. And he sets off at score:—

"By the loquacity of this miscellany, an empty-pated writer may with ease manage the profoundest subjects, and reply to the most vexatious questions."

"Girls become quite sure that they have souls when they fall in love, listen and hesitate, by the danger they then incur of losing them."

"A child born of a woman after her fourth marriage may claim to be the produce of a four-course system of husbandry, with due intervals of fallow."

"An Irishman's sensibility of joy is so ecstatic, that at its height, for relief, he is obliged to dilute it with pain, and so begins a fight."

"A sect of religionists, ignorant and bigoted, led by a priest, have as much free agency as a flock of sheep under the control of a dog."

"If the termination -logy were banished from the English tongue, and the old one craft substituted, abstruse things would be sooner understood."

"When women are as beautiful and pure as angels, and soar above things human, they sink below humanity and are as proud as devils and as ugly."

"The religion of men in America is said to have passed from them to the women and from them to the blacks, probably in its course to brutes."

"A court of justice is a thicket where foxes earth, to which silly sheep fly for safety from their enemies in the open lands, to be in it torn and fleeced."

"If your wife is a saint she is predisposed to adultery, if a wit to play the fool, and if a coquette to run in debt, which is she? perhaps all three."

"The look of a girl has expression in it when she is ripening and rounding into maturity, and ready to burst her bodice like a half-blown rose."

"Many bodies rise in the exhalations from the charnel-houses below the floors of the old cathedrals and churches, whose souls go another way."

"Languishing eyes, a softness like butter, and as easily melted, and a facility for reading, writing, and spelling, shew a predisposition for matrimony."

From these samples a faint idea may be formed of the five or six thousand *couplets* in these two volumes; but there is a considerable number not fit to be quoted.

DR. OLIN'S TRAVELS IN EGYPT, &c.

[Second notice: conclusion.]

Petræa, where we left our author, is laboriously and carefully described. In Egypt, he follows Wilkinson for antiquities, Lane for manners and customs, and Clot Bey for politics; but the fallen capital of Idumea had interest enough to engage all his descriptive powers, which are assisted by some good drawings by Catherwood. How much the difficulties of travellers are increased, and how many evils flow from the system, now not to be eradicated, of bribing the Arabs, cannot be better portrayed than in the statement, that an aged, filthy, and dirty sheik insisted by himself on a considerable sum for the privilege of ascending the mountain of Nebbi Harún, the Hor of the Old Testament. The waters from this mountain the author declares to flow northward. He identifies the Arabian acacia with the shittim-wood of Scripture; an identification in every way inconsistent with the size which the acacia attains, and its non-existence in the countries where the ark was most probably built. Getting for the first time near Hebron into a Bedwin's tent, it is declared to be comfortless and foul. The animals appeared to have a free access with the owners; mats and blankets, with some *nasty* camels' furniture, constituted the beds; and dirty milk was served up in still dirtier bowls. Alas, the president had no sympathies for this nomadic life! and yet on entering Hebron, he was already led to regret the clean sand of the desert, and was sorely disappointed at the comfortless manner in which he spent the first night in the promised land. There is to us something more ridiculous than serious, or duly consistent with piety, in the grumbling association of ideas thus established. Notwithstanding the scepticism of some late travellers and authors, the Dr. advocates the positioning of the tombs of the patriarchs, Abraham, Isaac, and Jacob, and of their wives, handed down by tradition, and confirmed by holy writ, as at Hebron. It is possible that on these, as on some other identifications, too much acuteness of scepticism has been lately exercised. Is there any counter-tradition equally credible, or any other cave at Hebron which lays claim to the distinction besides the one handed down by tradition? The author does not appear to be aware of the sanctity of the patriarchs among the Mohammedans; when being expelled from the massive structure built over the tombs, he said he walked out doubtful whether the place is connected with some tradition which renders it interesting in the eyes of Mussulmen, or whether their guide designed it as a hoax. On his way from Hebron to Bethlehem, the unfortunate doctor was thrown from his camel, and severely hurt. On his arrival at Jerusalem, he found a home at the house of the American missionaries; and we are glad to find him speaking well of some Englishmen, the Rev. Mr. Nicolayson and Mr. Grimshaw. At Jerusalem he witnessed the pious fraud of kindling miraculous fire within the holy sepulchre, so ridiculed by the sarcastic pen of Gibbon. The catholics, in a nocturnal procession, represented in scenic style the crucifixion of Christ, and the various events that preceded and followed that tragedy. The account given of this sacred drama is curious, and the author says too truly, the Mussulmen look upon these scenes with undisguised and bitter contempt. There is a tale narrated (vol. ii. p. 114) of the destruction of an Armenian convent, erected near the Latin Church of the Ascension, on the top of the Mount of Olives, effected through the personal influence of the Prince de Joinville, in his late trip to the East. We should doubt the story very much. The topographical and antiquarian details regarding the holy city are very clear and interesting. They are farther assisted by a plan of Jerusalem drawn by Catherwood, and the sketch of the vale of Jehoshaphat (of which we have never seen one in a traveller's portfolio without a different nomenclature of the tombs) is the best we have ever seen. The doctor thinks, perhaps with reason, that the immense blocks of stone which compose the foundations of the Haram, as the mosque of Omar is called from its highly sacred character, are remains of the ancient temple, and probably the work of Solomon. The discussions concerning other sites, as the grotto of the Virgin, the tombs of St. James and Zacharias, the pool of Siloam, the place of Isaiah's martyrdom, the well of Nehemiah, &c., are all characterised by great moderation and good sense, and an upright and pious endeavour to give due weight to tradition, without being led away by monkish legends or impositions on the one hand, or the hypercritical acuteness of some travellers on the other. In allusion to the identity of Calvary and the holy sepulchre, he says: "Protestant travellers, and especially American and English Protestants, often lose many of the literary and all the moral advantages of a visit to the theatre of biblical events by a morbid suspicion of whatever is affirmed or believed by monks and Catholics."

It appears that there are in the present day two curious characters residing at Jerusalem; one is an Englishman, who has resided there a mere hermit for several years. He has a sufficient income, and imitates in his dress Abraham, whom he has made his model. He lives in total seclusion. The other is an American lady, a Miss Livermore, of New Hampshire, who left her own country and came to Palestine for the purpose of participating in great religious events, believing herself to be one of the witnesses mentioned in the 11th chapter of Revelations. She is to testify for Christ a certain time, is then to suffer martyrdom, to be restored to life, and carried up to heaven!

On his journey from Jerusalem to Beirût the author visited Nablous and its interesting monuments, Sebaste the ancient Samaria, Esdraelon, Tiberias and its sea, Saffad, Tyre, and Saida; and while throughout this interesting journey he does not deny himself the luxury of communing freely with the glorious objects which presented themselves before him in this land of holy reminiscences, and he yields up his heart and imagination to the full power of the sacred associations which cluster upon the brow of its venerable hills and teem in its deep overshadowed valleys,—still, we find always a paramount earnestness in the simple pursuit of truth, combined with an admirable spirit of fair and watchful criticism. In fact, after pardoning the author, in a true spirit of Christianity, for his dislike to all that is English, except her missions, we cannot but say that he has fairly fulfilled his object of writing a book clear, simple, and perspicuous; unenlivened by the humour and incident of a Stephens, and without pretensions to the critical, philological, or antiquarian learning of a Robinson; and we have no doubt it will be a most acceptable work to a class of readers serious in their taste and practical in their objects, and will also be their best guide-book (where one is much wanted) to the more striking scenes of Egypt and the Holy Land. The author appears to have been too much of an invalid for the journey; hence,

though there is many a pious reflection, there is not a sunbeam of delight in the whole work, nothing but inconveniences, evils, and misfortunes: even the glorious Danube comes in for its share of detraction. "The voyage up that river," he says (p. 472), "is likely to be remembered by the traveller as combining nearly all possible sources of discomfort." A late noble tourist was not more difficult to please. Four times have we been up and down the Danube, and greater civility, attention, and more comfort, under the circumstances of so long a journey in a yet half-civilised country—we allude to the lower part of the Danube—it was never our lot to meet. Pest, however, roused his sympathies; and he declares it to be one of the most beautiful, and, notwithstanding Miss Pardoe, one of the least known cities in Europe. It is one of the least talked of, because least visited. On quitting Syria, the author says: "Events are hastening to demonstrate whether the stern appalling tyranny of the Egyptian dynasty, or the restored imbecility and corruption of the Turkish, is most incompatible with the well-being of human society." The ways of Providence are unknown; but it is impossible not to believe that had the French been in our position in the late war, greater advantages would have flowed to the Christians of the East than followed our anti-crusadic exploits in Syria and the Holy Land.

HENRY'S EVENTS OF A MILITARY LIFE, &c.

[Fourth notice.]

Our author's next station was St. Helena, where he saw the end of the career of Bonaparte, even to the examination and disposal of his body after death. He justifies the conduct of Sir Hudson Lowe, which, we believe, has during the intermediate time justified itself. When feelings and faction run high, clamour may blacken any man; but the lapse of a few years generally sets all to rights, and what was white shines out again. An extract will also shew Mr. Henry's opinion of Mr. O'Meara:—

"In the month of Feb. 1818, Bonaparte's *maître d'hôtel*, Cypriani, a faithful servant, who had followed all the vicissitudes of his fortune from the time he was a lieutenant of artillery in 1794, was attacked with inflammation of the bowels. The symptoms having assumed a dangerous character, Mr. O'Meara requested me to see him. Accordingly, having obtained the governor's permission, I repaired to Longwood, and continued to attend the patient until his death, which took place on the 26th of February. This poor man suffered excruciating pain in the early stages of his disease. I had known him previous to his illness, and often had long conversations with him, when we chanced to meet in our evening walks. Although Bonaparte's devoted servant, he was one of the most violent republican jacobins I ever met, and a person of a class that I had imagined had almost ceased to exist in France under the imperial rule. In the course of my attendance at Longwood, I was not a little surprised to learn accidentally that Napoleon had never visited his faithful servant during his last illness. No doubt this mark of respect would have been highly gratifying to the patient; yet it is a fact that no visit ever took place, although the sick man's chamber was under the emperor's roof, and not twenty feet distant from his bath. I have reason to believe, however, from the assertion of Mr. O'Meara, that during the last evening of Cypriani's malady, and when he was in a state of delirious insensibility, his master proposed to see him, but was dissuaded by Mr. O'Meara on the ground that the patient was not then in a state to recognise the emperor. According to O'Meara, Napoleon then talked a little extravagantly of the effect his presence might produce even in these desperate circumstances. It might reanimate the expiring efforts of nature, as it had retrieved the fatal disorder of his army at Arcola and Marengo. Notwithstanding this flourish, the man died unvisited by his master; and I confess, when I have read the affecting circumstances of the death of Duroc and other generals, whose dying hours the emperor's presence and sympathy soothed and comforted, no slight degree of incredulity has arisen in my mind in contrasting his deportment then and now. The key may be—it behoved him to assume grief, if he did not feel it, at the bedside of the dying marshal; in the case of the devoted servant no object of consequence was to be attained. Some time after Cypriani's death Mr. O'Meara called on me at Deadwood, with a smiling countenance, to tell me he was the bearer of good news, on which he offered me his congratulations. The emperor, it appeared, had consulted him as to the propriety of giving a fee or a present to the English physician who had attended his servant, and the result was that a present had been preferred. Mr. O'Meara added, that Napoleon had condescended to ask the name of the English doctor, and whether he was married or single; and that the business had ended in an order for a breakfast-service of plate, to be sent to Rundell and Bridges, Ludgate Hill, London. This was all very pleasing information, and it was not unnatural for me to felicitate myself on the prospect of such a present coming from such a quarter. Waking visions, too, of the pride I should hereafter feel in exhibiting my tea-service, or in asking my friends to the first *déjeûner* where it would be sported, might be forgiven; mixed with speculations as to the number of the pieces and the pattern of the plate. Nay, I will acknowledge — since I have kept few secrets from the reader — that I lost one entire night's sleep by these anticipations. Unfortunately the sequel proved, that as there are many slips between the cup and the lip, so an accident may keep asunder the teapot and the cup. A few days after this communication Mr. O'Meara again called; but this time his countenance had no such *riant* expression as on the former occasion. A difficulty had occurred: a statute had passed in the British parliament lately constituting the acceptance of any gift from Napoleon, or any of his suite in St. Helena, a criminal act. It was therefore necessary, previous to any farther step, to ascertain how I felt disposed, and whether I would consent to accept the emperor's present clandestinely, and without the knowledge of the governor. This it was now the object of Mr. O'Meara to ascertain: the emperor, he assured me, having an invincible repugnance to have any communication, direct or indirect, with Sir Hudson Lowe; or, as he expressed it, to permit any gift from himself to be contaminated by passing through the hands of 'Cain,' which was his favourite nickname for the governor. I took a little time to consult with my friends; more, indeed, as a thing usual in such cases than from any doubt of what was proper to be done. Two hours after, Mr. O'Meara returned to Longwood with the information that I could not without risking my commission accept any present unknown to the governor; but that I would ask his permission, which, there was little doubt, would be granted. I knew by Mr. O'Meara's significant gesture of shaking his head at parting that the thing was all at an end; and so it turned out. I heard no more of my plate. The matter was plain enough—a palpable attempt at a bribe to enlist even so humble a person as myself into Napoleon's service, and to bind him down to implicit obedience by first making him commit himself in a wrong action. This did not altogether rest on Mr. O'Meara's assertion; for afterwards, in returning from St. Helena, General Montholon assured me that the present was *bonâ fide* intended for me, and would have been sent if the above-mentioned difficulty had not come in the way. About this time Mr. O'Meara, having been discovered tampering with two or three individuals resident on the island, with the object of prevailing on them to accept presents clandestinely from Napoleon in violation of the regulations in force; and being also accused of repeating the confidential conversation of our mess, of which he was an honorary member, at Longwood, the governor stated the facts of the case to Sir G. Bingham and the commanding-officer of the 66th, intimating to the latter his opinion that Mr. O'Meara should not be permitted to continue a member of the mess, he having abused the privileges his position gave him. At this time Colonel Nicol had gone to England, and another officer, whose name I do not mention, commanded the regiment. Without consulting the officers of the mess, or submitting for their consideration the facts communicated to him by the governor, he sent a written intimation to Mr. O'Meara that his society was no longer desired by the regiment; which pretty strong hint the doctor disregarded, came to dinner the same day, and afterwards appealed to the officers of the mess as to the propriety of his conduct whilst mixing with them. Having been kept in the dark as to the real culpability of O'Meara, and being perhaps a little piqued at the proceedings of their commanding-officer, they readily certified to the gentlemanly deportment of Mr. O'Meara whilst he was a member of the mess. Mr. O'Meara, on finding his intrigues with the persons he had tried to bribe discovered, sent in his resignation; whilst at the same time Napoleon applied for a foreign medical attendant. Sir Hudson Lowe sent home these applications; confining Mr. O'Meara to the bounds of Longwood, and placing him under the same restrictions as the other persons of Napoleon's household. A few weeks after this, an order arrived from England to send home Mr. O'Meara; not from any representations from Sir Hudson Lowe—for there was not time for the recent offence of this gentleman to be communicated—but in consequence of information received by the government at home inculpating him as the tool of the fallen emperor. It is, I think, much to be regretted that the officers of the 66th's mess should have given Mr. O'Meara any written certificate of good conduct whilst a member of their mess. However correct his behaviour might have been before, the gross insult to our commanding-officer, and indirectly to ourselves, of sitting down to dinner after the prohibitory note he had received, ought to have prevented any verbal or written testimony being given a man who could act with such effrontery. As it turned out, our certificate eventually became one chief prop to the credibility of O'Meara's *Voice from St. Helena*—a specious but sophistical book, full of misrepresentations, yet more remarkable for the *suppressio veri* than the *assertio falsi*. My small work has nothing whatever to do with party, nor can its author have any object or interest but to tell the truth to the best of his judgment, and give an impartial opinion on matters coming within his

own observation in St. Helena. With reference to the breach of social confidence in reporting our mess-conversation to Bonaparte, I have no doubt whatever of the fact. In the unreserve of conversation with Madame Bertrand on the voyage to England after the death of Napoleon, she acknowledged to me that this charge was true. Indeed I can well conceive that O'Meara would have delighted in gratifying the illustrious prisoner by conveying to him any isolated expression of ardent youth heated by wine in his favour, and possibly in derogation of the restraints that were necessarily placed upon him. These accidental effusions would be construed by Napoleon and his suite into the opinion of the whole garrison of the island, and quoted as such in their acrimonious remonstrances with the governor. There can scarcely be any reasonable doubt entertained by those at all acquainted with the circumstances of the case, that Mr. O'Meara suffered himself to be cajoled and fascinated into the admirer, adherent, agent, and tool of Napoleon. I will not say corrupted; for he was of a nature to scorn a pecuniary bribe. Yet in one sense he was corrupted. He was perverted from his proper duty and allegiance, his judgment was warped, his conceptions of right and wrong were weakened and confounded, and his principles undermined, by the blandishments and sophistries of the great Machiavel with whom he held daily converse."

[To be concluded in next Number.]

The Stage-Coach; or, the Road of Life. By John Mills, Esq., author of "The Old English Gentleman." Post 8vo, 3 vols. London, Colburn.

An agreeable journey, in three starts, each composed of several short stages. Much of the road will be familiar to many readers; but the driver has a pleasant way of dressing up old tales of travel; and he, moreover, deprecates criticism by making reviewers' former kindness answerable for his second offspring. *The Stage-Coach* is, however, much inferior to *The Old English Gentleman*, and by no means equal to such ability as Mr. Mills exhibited in his former work: still the tales are chatty, and various enough to suit the tastes of most readers of this class of work.

The Busy-Body; a Novel. 3 vols. Bentley. The history of an affectionate family, beginning in courtship, and ending in matrimony. A thousand events, and as many uninteresting conversations, are narrated with a circumstantiality that is quite wearying; nor are the style and matter of an order to repay the trouble of more than a very skimming perusal of the doings of the *Busy-Body*.

The Influence of Aristocracies on the Revolutions of Nations; considered in relation to the present circumstances of the British Empire. By James J. Macintyre. 8vo, pp. 448. Lond., Fishers. The author disclaims being a radical or chartist, but he is a desperate anti-aristocrat and a very warm millocrat. His argumentation all tends to shew his opinion that the British constitution, as it has been for a century and a half, and now is (though liberally reformed a dozen of years ago), "founded on principles impolitic, unmanly, and unsoldierly." Why unsoldierly we do not comprehend; but maybe Mr. Macintyre does. There is much of half-cracked rubbish in the book, such as we might expect from a weak mind dwelling monomaniacally on important questions without the power of understanding their bearings, and losing itself in the endeavour.

ARTS AND SCIENCES.

THE BRITISH ASSOCIATION.

[Continuation of Reports.]

Before proceeding with the reports of the sections, we may briefly observe, that the Cork meeting has, on the whole, gone off better than was at first expected. It is true that it has been less numerous than any other from the time of the organisation at York, there not being more than four hundred members, strangers and natives, enrolled, and consequently the fund unsupplied with the hitherto current or annual increase of means to carry out its purposes, and the authorities obliged to fall back on their previously accumulated resources; but still the cause of science has not retrograded in the transactions of 1843, nor has it been suffered to decline much in the prospective grants for 1844.*

Several matters and misunderstandings led to the partial failure of this meeting. The rumoured agitation of the country (of which nothing was seen by visitors in the south of Ireland) deterred many English and Foreigners from attending; and the distance and inconveniences of a sea-voyage kept others away. Local circumstances, at the same time, prevented such a junction of the Irish inviters as might have been expected from the warmth of their invitation. Party-feeling, to a certain degree, affected this matter; and the nobility and gentry, in general, did not seem to feel *à priori* that the assemblage would be successful, or even that it would take place at all. Many of them consequently held back till too late to remedy the error, and seemed quite astonished at the influx of distinguished persons to take part in the proceedings. In the city itself a considerable defalcation was occasioned by a mistaken idea about the local fund, to the subscribers to which it was not sufficiently explained that this fund was for necessary expenses, and did not entitle them to become members of the Association without paying an additional two pounds each; which, when discovered, produced much dissatisfaction, and threw off a number of most respectable citizens of Cork. Perhaps something might also be traced to such jealousies and differences of opinion as exist in all localities, and are not, certainly, less prevalent nor less violent in Ireland than elsewhere.

The result has, in truth, been, as we have stated, a "partial failure," however disguised by compliments paid to the sectional business, and highly coloured descriptions of excursions and entertainments. The former, upon reviewing the whole week, may fairly be considered as rather below than above the average either in novelty or importance; and the latter only comes within the common rule which, throughout the world, exalts small things into great, when done by ourselves or in our immediate neighbourhood and relations. We cannot point out one remarkable scientific fact which is entirely novel; and the yearly reports have, with very few exceptions, done little to increase our knowledge of the various subjects under investigation. Sir John Herschel's report of the committee for meteorological and magnetic co-operation has, indeed, produced a valuable record of facts and observations; Mr. Scott Russell's continued experiments on sound in buildings, on waves, and on the form of vessels, are worthy of his reputation; Prof. M'Cullagh's establishment of the laws of total reflection, surmised only by Fresnel, is of high interest; and Mr. E. Hodgkinson's attempt to make out a law of non-elasticity in hard materials (first broached at Manchester), is, perhaps, the most original feature in the meeting; whilst Prof. Owen's admirable view of fossil animals re-opens more and more the ancient earth to our inspection; and Professor E. Forbes's extraordinary exploration of the shallows and the depths of ocean appears to be disclosing a world hitherto neglected for the gratification and edification of mankind, and one which may revolutionise the science of geology. These last two contributions belonged to the section of Natural History, and have especially helped to signalise the great improvement which has taken place in the doings of that particular division of the Association, and raised it to a much higher position than it has heretofore occupied. Dr. Allman and other Irish naturalists have likewise, by their able contributions, done much for this section.

With these remarks we resume our task, and reserve other observations peculiar to the meeting, as well as upon national topics, for insertion as occasions occur to introduce them. We put first, out of its order of succession, the report of Sir John Herschel (Section A, Tuesday) to which we have alluded.

* Not to display this too much, it may be observed, that the treasurer refrained from making the customary statement of receipts, expenditure, and prospects.—*Ed. L. G.*

REPORT OF THE COMMITTEE

Appointed to conduct the co-operation of the British Association in the system of simultaneous Magnetical and Meteorological Observations.

In this their fifth report on the momentous subject entrusted to them, your committee propose to follow the arrangement of the matter under the several heads adopted in their report of last year (see *Lit. Gaz.*, No. 1328), and in nearly the same order, as on the whole most convenient and perspicuous.

Antarctic Expedition.—The committee congratulate the Association on the approaching return of this expedition,* having accomplished in the fullest degree all the objects of its mission. Three seasons, in which they have forced their way at different points far within the higher latitudes of the southern hemisphere, have furnished a magnetic survey of these regions equalling or rather surpassing, both in completeness and accuracy, all those sanguine expectations which led the Association to urge on the Government the prosecution of this great enterprise. Though not marked by geographical discoveries of equal splendour with those which signalised their first campaign in the antarctic circle, the two succeeding seasons have each produced an equally rich harvest of magnetic results. The observations as they have reached England have been committed for publication to the superintendence of Col. Sabine, and under due form and continuation of a series of "Contributions to Terrestrial Magnetism," are in process of communication by him to the Royal Society, and of publication by that learned body in their Transactions. In the last report was given some account of this description, in which the observations between England and Kerguelen's Island are discussed. The 5th of these series (which are now in progress of printing) contains, comprised in about sixty

* Statements have appeared in the newspapers that the expedition had been spoken with at the Western Islands; but (*Friday, 1st September*) no more recent accounts have reached the Admiralty than have appeared some time ago in the *Literary Gazette*. Whether or not the rumour may be true, we cannot tell, as Captain Ross stops to take observations wherever they touch, and it is probable that we may not have the opportunity of welcoming him and his gallant friend Captain Crozier (whose sailing we witnessed) as yet for a month or six weeks.—*Ed. L. G.*

pages of tables, the observations within the antarctic circle made in the summer of 1840-41 on board of both the ships, as also those on board the Erebus between Kerguelen's Island and Van Diemen's Land.

In this paper the important subject of the corrections due to the iron of the ships is fully considered; and by the aid of formulæ furnished by Mr. A. Smith, of Trinity College, Cambridge, and founded on the theory of M. Poisson, delivered in his memoir of 1838, "Sur les déviations de la boussole produites par le fer des vaisseaux," the constant coefficients of these corrections for each ship are investigated. These coefficients are four in number for each ship, falling naturally into two pairs; the one depending on a series of azimuths, observed and compared with the true azimuths, round a whole revolution of the ship's head, at a fixed station; the other on a series of inclinations or dips observed in the same situations of the ship, and compared *inter se*. Observations for this express and most important purpose were made at several stations, viz. at Chatham before the departure of the expedition, at Hobart Town (Van Diemen's Land), and at Auckland Island. From these Colonel Sabine has obtained three sets of values of the former pair and two of the latter, and the results thus produced are found to agree admirably: thus affording ground for the fullest confidence in the corrections depending on them, as well as in the theory from which they are derived, and in the general approximation to truth of the hypotheses necessarily made as to the distribution of the iron in the vessels. In the case of one of these coefficients an opportunity was afforded of testing its value by a series of observations made in a high south latitude by employing a different formula, involving the true dip, as actually observed on the ice at the moment, and the result proved in perfect accordance with the mean of those deduced by the other method.

There is one other constant which affects the intensity, entering as a general multiplier for the reduction of the observed to the true intensity. The value of this for the Erebus is obtained by Col. Sabine from a series of observations made at Hobart Town with Mr. Fox's intensity-apparatus similarly instituted throughout a complete revolution of the ship's head—the partial results of which, grouped by pairs, and checked by the use of observed in place of computed values of the disturbed inclination, offer an agreement highly satisfactory. The above statement applies to the Erebus. For the Terror the first pair only of constants (those depending on the azimuths) are deduced—from observations at Chatham and Hobart Town; the constants for correction of the dip and intensity could not be obtained, the requisite observations not having yet reached England. Besides these, there are a variety of index-corrections and other elements for the observations of inclination and intensity, which, having been computed and duly applied, the tabulated results have been projected by Colonel Sabine in two charts, exhibiting both the individual results and the approximate course of the isodynamic and isoclinal lines deduced from them—an inspection of which gives room for several interesting remarks.

1. As great and greater discordances are to be looked for, and must frequently be experienced, in magnetic surveys conducted on land than in those at sea. In effect, the chief and worst cases of discordance occur in observations made on islands.

2. The general form of the curves of higher inclinations in the southern hemisphere is much more analogous to that in the northern than appears in M. Gauss's maps.

3. Capt. Ross's observations of intensity lead also to the conclusion of a much closer analogy between the two hemispheres than M. Gauss's maps would appear to indicate. No higher intensity than 2·1 has been any where observed.

4. In examining the observations of declination, particularly those which point out the course of the lines of 0° and 10° east, a more westerly position is indicated than that assigned by M. Gauss for the spot in which all the lines of declination unite.

It cannot be indifferent to the British Association to learn, that first by the blessing of Providence, and next by the watchful care and the experienced judgment of the commander of the expedition, all these results have been obtained without those drawbacks to which, from the duration and peculiar hazards of the voyage, it might perhaps have been deemed unusually liable. Capt. Ross closes his last despatch to the Admiralty, dated from the Cape of Good Hope, in April 1843, with the following remarkable words:—"It affords me the highest gratification for a third time to report that our ships have sustained no material damage, that we have not been visited by casualty or sickness, and that there is not an individual in either ship in the sick report."

2. *British and Foreign Observations, Publication of Magnetic Observations and Memoirs, &c., relating to Terrestrial Magnetism and Meteorology.*—The Government of the United States has appropriated funds for the establishment of a magnetic observatory at Washington, under the direction of Captain Gilliss, of the United States navy. This gentleman has lately visited Europe for the purpose of obtaining instruments for this observatory, as well as for a national astronomical observatory, which is also placed under his direction. The United States Government has also appropriated funds for the support during three additional years of the magnetic observatory at Philadelphia, under the direction of our zealous and accomplished corresponding member, Professor Bache.

In consequence of an application made by the president and council of the Royal Society, through the secretary of state for foreign affairs, to the Bavarian Government, the magnetic observatory at Munich, which, under Dr. Lamont, has rendered such good service to the magnetic cause, has been continued for three additional years. The results of the first three years, 1840, 1841, and 1842, have been published in a memoir in the Bavarian Academy of Sciences, which has been translated in the 12th No. of Taylor's *Scientific Memoirs*.

A second volume of the magnetic and meteorological observations made at the Prague observatory has been published by M. Kreil, containing the regular observations from Aug. 1840 to July 1841, and the disturbance-observations from Sept. 1839 to Nov. 1840.

The regular observations made at the magnetic observatory at Christiana, under the direction of the veteran and indefatigable Professor Hanstein, are preparing for publication at the expense of the Norwegian Government. They consist of an unparalleled series with the unifilar magnetometer observed at every ten minutes, night and day, from Nov. 1841 to the end of June 1843: accompanied by observations of the bifilar at every second hour, from June to December 1842, and since that period hourly.

M. Gauss has published in the last volume of the *Resultate*, a laborious analysis of the observations made with the inclinometer, and an examination of all the sources from whence error may introduce itself into the results. This memoir, which is calculated to be of much practical use, has been translated in the 12th No. of Taylor's *Scientific Memoirs*. The testimony which M. Gauss bears to the excellence of the inclinometer made by the late Mr. Robinson must be very gratifying to the friends of that much-regretted artist.

British colonial stations still await the exact determination of the temperature coefficients, for which object an auxiliary apparatus has been sent to each observatory. The first part of the volume of the disturbance-observations has been completed, comprising those made in 1840-1841. Colonel Sabine has prefaced this volume with a synoptic statement of the general conclusions which it has been found practicable to deduce from the observations in their actual uncorrected state (the temperature-corrections being for the most part, and the scale-coefficients in certain of the series, wanting), some of the more important of which it will be proper here to mention.

The object of this publication being to present in their most salient point of view the *irregular* movements of the needle and variations of the magnetic force, it is necessary, in the first instance, to find out and subduct from the observed changes every thing of a regular periodical nature which the actual amount of present knowledge has enabled us to ascertain. This has been accordingly done, so far as Toronto and Van Diemen's Land are concerned, both for the diurnal, monthly, and annual fluctuation of the magnetic elements, as far as it has been practicable yet to deduce them; and the results have afforded room for preliminary conclusions of no small interest, which have been stated by Col. Sabine in his preface, and of which the following is a brief outline:—

At Toronto the march of the regular diurnal movement in declination does not consist in a single uninterrupted progress and regress of the needle. Commencing from 2 P.M. its movement is continuous to the eastward till 10 P.M.; it then returns westward (through a corresponding small angle) until 2 A.M., when its eastward movement is resumed and continued till 8 A.M., after which its return is continuous to the west until 2 P.M. The second eastward progression is more decided in summer than in winter; and the total range of diurnal fluctuation is also more considerable.

At Van Diemen's Land (a station, it is to be borne in mind, almost antipodal to Toronto) the course of diurnal oscillation corresponds with that above stated in all but one essential feature, viz. that the hours (in mean time at the station) of easterly movement of the north end of the bar at the one station are those of its westerly movement at the other; that the diurnal range is nearly the same in both, with a similar inequality in its summer and winter movement. A similar alternate progression and recess also prevails, and at the same hours. These are certainly very remarkable features, shewing a regular connexion between two stations so remote, carried out into what may be regarded as minute particulars. Falling in, however, with the generally received impression of the universality of the causes (whatever they may be) which produce the periodical fluctuation of the magnetic elements, they can only be regarded as contributions to our knowledge of details. It is otherwise with the results deduced by a comparison of the observations recorded in this volume, not only at these two stations but also at St. Helena, with each other,

and with those made by M. Kreil at Prague, as respects cases of unusual magnetic disturbance, which occur (so far as we can yet perceive) casually, or at least non-periodically. Such comparison has enabled us at length unequivocally to state it as a general proposition, that the whole magnetic system of our globe is affected in the majority of cases of great disturbance. For it is found, that if a list of days of great disturbance, independently noticed as such, and marked by extra observations at each station, be made out, these lists will be found to coincide in at least a majority of days, and more especially on those days when the recorded disturbances have been greatest. Of 29 principal disturbances recorded in Col. Sabine's synoptic table, some confined to a single day, others running through two or three successive days, and comprehending altogether 49 days, by far the greater part are shewn to have manifested themselves at Toronto, Van Diemen's Land, and Prague; and 15 are marked by extra observations at St. Helena. But though it is thus rendered certain that the whole globe is affected in many and great "magnetic storms," it is equally shewn that the minute identity of particular shocks which seemed to result from the earlier observations of this nature in Europe, cannot be maintained (as a general proposition) as traceable on any thing like so extensive a scale. This is not the proper place for theory, nor is any thing more than an analogical illustration intended, if we compare the affections in question to what might be supposed to occur if we conceived the earth surrounded, besides the ocean and air, with an electric atmosphere of excessive elasticity and mobility, in which were propagated, from origins unknown to us, undulatory movements of every order, from the most minute local oscillations to waves affecting (almost in an instant, or in very short intervals of time, but varying in depth and amplitude with the geographical co-ordinates) the whole extent. Could such electric waves* be conceived as affecting the magnet, we might form some idea of the mode in which periodical shocks thin off, as it were, by distance of place, and are replaced by others of different local origin.

Not the least interesting part of this volume consists in the notices at Toronto of auroral phenomena accompanying the extraordinary magnetic disturbances. They are many and remarkable, and can hardly fail to throw great light on this branch of the general subject.

The difficult subject of the determination of the earth's magnetic force in absolute measure has been subjected to farther investigation by Dr. Lloyd. The difficulty, which is of a practical rather than a theoretical nature, arises from this, that the expression for the tangent of the angle of deflection of one magnet by another being expressed approximately by two terms of a series according to descending powers of their mutual distance, viz. the inverse cube and 5th power with unknown coefficients, these have to be determined in Gauss's method by observations of deflection at two different distances, and by elimination, in which process serious errors are introduced in the result by small errors in the observations. The object of Dr. Lloyd's present paper is, to point out a means by which the quantity sought may be obtained without elimination by observations at one distance only, thus diminishing both the trouble of the observation and increasing the accuracy of the result. This method depends on the assumption of an empirical law in the distribution of free magnetism in a magnetised bar, inferred by Biot from Coulomb's researches, in virtue of which a simple ratio, dependent only on the lengths of the two magnets, subsists between the coefficients of the inverse powers above mentioned—a ratio such that, on a certain simple assumption of the proportional lengths, the term depending on the inverse 5th power may be made to vanish *ipso facto*, and thereby get rid of the whole difficulty. Dr. Lloyd adduces several experiments confirmatory of these results.

Annalen für Meteorologie, Erd-Magnetismus, &c., published by Mr. Larmont, with the assistance of Messrs. Grünest, Koller, Kreil, Lamont, Plieniger, Quetelet, Stieffel, for the year 1842 is completed, and will be followed up by similar series in quarterly parts. In this collection are consigned a multitude of important contributions to these subjects from all quarters, and more particularly magnetic observations from Munich by Dr. Lamont, and meteorological registers from Marseilles by M. Benjamin Valz, from Schlössl by M. Bayer, from Dorpat by M. Müdler, from various stations in Labrador and Greenland, from Utrecht by M. Van Rees, from Munich by M. Leonhardt, and a series of comparative observations from Stuttgard, Grengen, Carlsruhe, Vienna, and Parma, in which the barometric and thermometric observations are not stated absolutely, but only their differences from Munich, an arrangement of which it is not very easy to perceive the advantage. The volume in question contains also an investigation by Dr. Lamont of the law of distribution of magnetism in magnetical bars, in which various methods of determining by observation the coefficients of an empirical series representing the intensity of free magnetism in ascending powers of a distance of a point from the centre of the magnet, are proposed.

Magnetic Surveys.—At the request of the East India Company, the magnetic observatories of Simla and Singapore have been supplied with a portable magnetic apparatus, which we hope will be speedily and extensively employed in magnetic survey, having the respective surveys in central points.

M. Kreil is about to add to his most useful observatory-labours a magnetic survey of Bohemia, for which he has obtained portable apparatus on the construction proposed by Dr. Lamont.

North American Survey.—Letters have been received from Lieut. Lefroy, dated from Lachine on the 28th of April, and from Sault St. Marie May 20th, of the current year, giving an interesting account of his progress so far on his arduous expedition, and detailing his plan of operation for this and the next year, with a sample of each day's performance. Lieutenant Lefroy reached Montreal on the 25th. Here, on consultation with Sir G. Simpson, he found it advisable to recast the plan of his route, and to resolve on proceeding first to York Fort, and returning thence to Norway house, ascend the Sascertchenan to Edmonton, which he expects to reach on September 20, whence crossing the Umja to descend it on the ice to the Slave Lake, and return to Athabasca for the remainder of the winter, working his way back to Canada in the next season, and taking Moose Fort on the way back. By the adoption of this route a more complete circuit of the forces of maximum intensity will be accomplished than by that originally contemplated. Every necessary order and instruction and every facility he states to have been most readily accorded, and in particular a circular to have been issued to all the officers of the Hudson's Bay Company, amounting to a *carte blanche*, commanding all the resources of the company. The line of no-variation Lieut. Lefroy states to have been crossed between La Cloche and Sault St. Marie, up to which point little change of dip had been experienced, his course leading him nearly along the isoclinal line of 77°.

Naval Observatories.—The second series of Sir Edward Belcher's magnetic determinations at 32 stations, principally in parts of the Pacific Ocean and in the Indian and Chinese seas, have been reduced by Colonel Sabine, and printed in the second part of the *Philosophical Transactions* for the present year. The two series of Sir E. Belcher's observations, which are now printed in the *Phil. Trans.*, contain determinations of the three magnetic elements at 61 stations, widely distributed over the surface of the globe; and that indefatigable officer has again sailed for the coast of China and the Pacific, furnished with an improved magnetic equipment, including the portable magnetometer-apparatus and a Fox's inclinometer and intensity-instrument for observations at sea.

The observations from Captain Blackwood's expedition have begun to arrive, both those with Mr. Fox's instrument at sea and with the portable apparatus on occasions on shore. The observations of this expedition promise to be of great value from the zeal and intelligence which those already received evince on the part of Lieut. Shadwell and Mr. Evans, under whose particular direction this branch of the public service has been placed by Capt. Blackwood.

No expense whatever has been incurred in the present year; but your committee pray the continuance of the grant made to them at the last meeting to meet such demands as may accrue.

(Signed on the part of the committee)
J. F. W. Herschel.

In regard to the correction of the compass for the iron of ships, which has been most satisfactorily tested, Col. Sabine stated one remarkable circumstance, namely, a change in the constant for the ship's attraction according to the change of magnetic latitude. The magnetism of the ship changes with the magnetical position, but always a little behind, requiring time to adjust itself. This adjustment would be retarded if the quantity of hard iron in the ship were greater, and therefore the presence and mass of hard or soft iron are to be taken into consideration in calculating the formula of correction.

When the reading of the report was concluded, Prof. Lloyd said there was one point, which Col. Sabine had only lightly touched upon, singularly interesting. It was the calculated magnetic intensity of the southern hemisphere. Previously to the starting of the expedition, according to the observations then known, Colonel Sabine had drawn up a memoir of expectations for the magnetic intensity of the southern hemisphere, and these anticipations have been verified in the fullest degree.

* It is by no means necessary, in the way of conceiving the subject, to assume an atmosphere of pure electricity (of which we can form no conception). But we may, for hypothesis' sake, admit the existence of an atmosphere of some medium infinitely more rare and elastic than air, by whose compressions and dilatations electricity may be momentarily developed and absorbed, as caloric is by those of air in the phenomena of sound, manifesting itself by its action on the magnet, and possibly by auroral pulsations also, of which latter phenomena it seems excessively difficult to give any other account.

FRIDAY.

SECTION A.—*Mathematical and Physical Science.*

1. Mr. Snow Harris, report on the meteorological observations at Plymouth.
2. Rev. Prof. Lloyd on the method of graphical representation of physical results.
3. Mr. Graham Hutchinson on the nature and cause of the diurnal oscillations of the barometer.
4. Mr. J. Nott on terrestrial magnetism.
5. Sir W. Hamilton on a theorem in the calculus of differences.

1. Mr. Snow Harris gave a most satisfactory account of his stewardship. The first series of tabulated results were from Whewell's anemometer, which windguage Mr. Harris has greatly improved, and from which he expected to get an integral of the wind, the direction and intensity in a given time. The observations had been continued for two years, and the first conclusion to be drawn was, that the resultant of the current at Plymouth resembled a trade-wind from south to north; second, that the rate of the current was five miles an hour. Mr. Ostler's anemometer will not register small forces, which is a desideratum; but the mean hourly pressure obtained from it was a result of interest. Both the instruments have greatly advanced in usefulness since taken up by the British Association; but they are far from perfect yet. The series of hourly observations for the barometer, thermometer, and hygrometer, have been extraordinary for the last year to Christmas 1842. They have been continued now for five years, and projected in curves; but the remarkable fact is, that the curve for 1842 is very nearly the mean of the whole. The connexion between the intensity of the wind and the oscillation of the barometer is also striking,—intensity low, barometer high, and *vice versa*. Mr. Harris proposes to continue the observations to the end of 1843, especially in regard to Whewell's windguage, which Mr. H. thought possible to make as perfect as a chronometer, and he asks for a farther small grant: the instruments at the end of 1843 to be deposited at Kew. The final report will be ready for York next year.

Prof. Lloyd read an extract from a letter which he had received from Mr. Ostler, communicating that he had effected improvements in his anemometer, whereby he could obtain very superior records. He had projected a new form of vane, which greatly reduced the oscillation; and he had doubled the size of the pressure-plate, which gave smaller observations, and yet it was not too large for hurricanes.

2. Prof. Lloyd described the present method of representing physical results, and the difficulty of connecting by a regular curve the series of points obtained. He proposed the bisecting the interval of these by a new series of points, the connecting line of which, avoiding the excessive points and steering a mean course, would be the true curve and the nearest approximation to exact graphical representation.

3. Mr. Hutchinson's new theory may briefly be described as the resultant of the velocities of the revolving motions of the earth on its axis and in its orbit. The accordance or opposition of which, and their several relations to each other, being considered sufficient to account for atmospheric variations, diurnal atmospheric tides, barometric alternations, the annual maxima of Humboldt, &c. &c.

Mr. S. Harris said, that Mr. Hutchinson's theory was ingenious and worthy of attention. It would be curious to see what relation to physical forces the orbitual and diurnal rotations may have.

4. Mr. Nott's paper was read only in part, the remainder being reserved for a future day. We defer our report.

5. Sir W. Hamilton's communication will be best understood by a study of the report in the "Transactions."

SECTION B.—*Chemistry and Mineralogy.*

1. Dr. Tamnau, of Berlin, on newly discovered three-twin crystals of harmotome, so arranged that they form a regular rhombic dodecahedron.
2. Dr. Andrews on the heat of combinations.
3. Mr. T. Spencer on the preparation of paracyanogen.
4. Mr. W. West on a remarkable case of the action of water on lead.
5. Prof. Kane, report of progress on the inquiry into the chemical history of colouring matters.
6. Prof. Draper on the action of plants on carbonic acid and the alkaline carbonates.

1. Dr. Tamnau's paper referred to the observations of Prof. Mohs, who first pointed attention to the fact that harmotome could not belong to the pyramidal system, in which it was placed by Werner and his followers; and, from the crystals now exhibited from Bohemia, shewed that it was formed as a regular rhombic dodecahedron. Thus the harmotome is decided to be in its primary form a right square four-sided prism, a mineral pyramidal in mathematical measurement, and prismatic in physical qualities.

2. Dr. Andrews on the heat of combinations went to prove the fixity of a law deduced by him from former experiments; viz. that "when one base displaces another from any of its neutral combinations, the heat evolved or abstracted is always the same when the base is the same; or, in other words, the change of temperature which occurs during the substitution of one base for another in any neutral compound, depends wholly on the bases, and is in no respect influenced by the acid element of the combination." The accuracy of this law was tested by taking equivalent solutions of various neutral salts, and decomposing them by the addition of the dilute solution of the hydrate of potash: when the strength of the solutions, and their temperature, were properly adjusted, the same variation of temperature always occurred during the decomposition of the salt of the same base. If the base (in the state of a hydrate) developed when alone less heat than the hydrate of potash in combining with the acids, an elevation of temperature occurred during the decomposition of its salt by the latter; if the reverse were the case, the decomposition of the salt was attended by a diminution of temperature. Thus the decomposition of equivalent solutions of the salts of the oxide of copper was attended by the evolution of the same amount of heat as was the decomposition of the salts of the oxide of zinc; but the heat extricated by the former was about twice as great as that extricated by the latter, because oxide of copper produced less heat in combining with the acids than the oxide of zinc. The salts of lime furnished an example of an absorption of heat when their solutions were decomposed by potash,—a circumstance easily explained by the fact, that the hydrate of lime, when combining with the acids, developed more heat than the hydrate of potash. The exact neutrality of the salt to be decomposed, a perfect equality of temperature in the solutions before mixture, and the precipitation of the oxide in the state of a pure hydrate, and not a subsalt, were absolutely essential to the result of these experiments.

Prof. Kane spoke highly of the value of this communication; and some interesting discussion ensued, in which Prof. Apjohn and Mr. Jennings took part.

3. Mr. Spencer on the preparation of paracyanogen. His process is to take a solution of cyanide of potassium, sp. gr. 1200, at the ordinary temperature of the atmosphere, and pass a current of chlorine through it until it is well saturated, which may be known by effervescence taking place on its surface. During the passage of the chlorine the temperature is raised from 180° to 190° Fahr., and when it is nearly saturated dense white fumes are given off, which he considers to be cyanogen and ammonia. At this point of the process the solution becomes perfectly dark and turbid, and a black precipitate falls to the bottom. It should then be left to rest for a few hours, when it will be found that a copious precipitate has fallen, while the solution assumes a scarlet colour. The solution is then to be decanted off, and the precipitate, which is paracyanogen, collected on a filter and washed. The paracyanogen prepared in this manner is slightly soluble in cold water, which is the only property in which it is different from the same substance formed by other methods.

4. Mr. West's case of the action of water on lead consisted of the corrosion of the latter by spring-water after passing through an iron pipe; and the inference drawn was, that the contact of peroxide of iron caused the danger, which might be avoided by means of giving a metallic coating to the pipes.

5. The report on the chemical history of colouring matters stated that little progress had been made, but the investigation was continued.

6. The last paper was read by Prof. Kane. Prof. Draper's theory is, that the decomposition of carbonic acid by the leaves of plants is effected by the luminous rays of the spectrum, and not by the chemical rays. For the purpose of proving that, he took a series of tubes, half an inch in diameter and six inches in length, and arranged so that the coloured spaces of the spectrum fell on them. In those tubes water, impregnated with carbonic acid, and containing a few green leaves, was placed. He supposed that if the decomposition were due to radiant heat, the tube occupying the red space, or even the one in the extra spectral space at that end, would, at the close of the experiment, contain most gas; if to the chemical rays, in the violet, indigo, or blue; but if to the luminous rays, the gas should make its appearance in the yellow, with some in the green, and some in the orange. The result proved his anticipations. In the tube in the red space a minute bubble was sometimes found, but sometimes none at all; in the orange a considerable quantity; in the yellow a very large amount comparatively; in the green a much smaller quantity; while in the blue, the indigo, the violet, and extra spectral space on that side, not a single bubble was observed. He stated that he decomposed the alkaline bicarbonate by leaves in the sunshine—the effect not being limited to the removal and decomposition of the second atom of the acid, but passing on to the first—the neutral carbonate of soda itself decomposing, and yielding oxygen gas. He also mentioned an important improvement on the tithonotype, and a new process of multiplying daguerreotypes. For the latter, his old plan was to evaporate to dryness on their surface, after being fixed by a film of gold, a solution of gelatine; but his new is to precipitate copper by the electrotype on the surface of the daguerreotype, after it has been fixed by gold. The copper being much more tough than the gelatine, separates readily from the silver, and, when the operation is successful, bears a perfect representation of the beauty and perfection of the original picture. Prof. Draper considers this

method totally different from the attempt which many persons made to copy the daguerreotype by voltaic electricity, and that, in consequence of the ease with which they are made, the problem of multiplying the daguerreotype may be regarded as solved.

Professor Apjohn questioned the results announced by Prof. Draper, and called on Mr. Hunt, who had experimented so much on the subject; who confirmed his opinion that the chemical and not the luminous rays were the most efficient in producing the decomposition of the carbonic acid absorbed by the plant. Mr. Hunt described his experiments on plants with coloured glasses and with glass vessels filled with coloured media; and, from every result he had observed, differed entirely from Prof. Draper. He would resume his study with the rays of the prism;* and, in conclusion, he mentioned certain peculiarities in the vegetation of South America, which seemed to lead to the conclusion, that there existed a difference between the effects of light in southern and northern climes.

As closely bearing upon this subject, we may add here Mr. Hunt's paper read in Sect. B. on Saturday.

The object of Mr. Hunt's communication was to shew the high probability that the rays which emanate from the sun are constantly acting upon all bodies, and that but for our ignorance of methods by which the impressions can be brought out, we should be enabled to use any body as a photographic material. In addition to those combinations which were well known to possess photographic properties, the author called attention to the wonderful additions made to the list by Sir J. Herschel, who had shewn that the salts of iron and of mercury were very rapidly changed by light; and nearly all kinds of vegetable juices were changed by its influence. The author was now enabled to add the results of numerous experiments, all of which went to prove the decomposing power of the solar rays. In addition to the salts of silver ordinarily used, it had been found that more than twenty combinations with organic acids gave very beautiful results; and that the cyanate, and arseniate, and sulphuret of silver, previously considered as insensible, were really acted upon with great rapidity. Combinations of gold with cyanogen, and benzoine, and many other bodies, proved the readiness of this metal to change in the sun's rays. The salts of platinum were also found to be rapidly affected; and some pleasing photographs on papers prepared with combinations of platina were shewn. Mr. Hunt had also been successful in proving this change to take place under the same influence on nearly all the salts of copper—many of which changed rapidly, and produced very pleasing pictures—and, as far as they had been yet examined, on the salts of manganese, of antimony, of tin, of lead, of cobalt, and of arsenic. In addition to these, many of the cyanates, the ferrocyanates, and the iodides, with alkaline bases, were found to change with considerable rapidity. Many of these preparations which had received photographic images were shewn to the section; and the author expressed his regret that, from the fleeting character of some of the most interesting of these results, he was unable to do more than describe the effects.

The author then detailed many very remarkable phenomena which were presented by receiving the impressions of the prismatic spectrum upon different sensitive materials; all of which went to shew the necessity of separating from light and also from heat that agent which was active in producing these changes which have been described. This element had its origin in the sun, and always accompanied the rays of light and heat; but its functions were different from either; and it appeared that we were on the verge of discovering an important power, which was ever active in maintaining that system of change which appeared to be constantly going on throughout the works of creation.

* Assuredly the best method, and freest from suspicion of chemical interference.—*Ed. L. G.*

SECTION C.—*Geology and Physical Geography.*

1. The president of the section, Mr. Griffiths, on the yellow sandstone of the north of Ireland.
2. Mr. Phillips on certain movements in the parts of stratified rocks.

1. Of Mr. Griffith's lecture, which occupied two hours, it would be impossible to give even a concise account without occupying a far larger space than its general character demands. It went into clear and interesting details of the geology of Ireland, illustrated by his splendid coloured map, and various diagrams hung around the walls, all shewing the carboniferous stratification of the country. Mr. Griffiths divided it into five groups; and in the course of his remarks, noticed a few minor points on which his opinions had been modified or slightly changed. This led to several speeches from Mr. Murchison, Mr. Lyell, and Mr. Phillips, each adapting the data to their known views, without, however, eliciting any striking novelty on which to dilate.

2. Mr. Phillips's lecture on stratified rocks also followed at length, and was delivered in his own plain and conclusive manner. His explanations of the effects of cleavage and joints in rocks were listened to with marked attention by his auditory; but nothing occurred to us to add materially to what we have reported of the sessions of the Royal Geological Society of London.

SECTION D.—*Zoology and Botany.*

1. Mr. J. Blackwall, F.L.S., report on the use of the *palpi* of *Araneidea*.
2. Rev. B. J. Clarke on the Irish species of the genus *Limax*.
3. Dr. Allman on the anatomy of *Plumatella repens*.
4. Mr. C. W. Peach, report on the habits of marine testacea.
5. Mr. Humphreys, catalogue of the mollusca in the county of Cork.
6. Capt. J. E. Portlock, extract of a letter from Corfu.
7. Mr. H. E. Strickland, report on the vitality of seeds.

1. The business of the day was opened by the secretary reading a paper from Mr. J. Blackwall, on the habits of the *Araneidæ*, especially the uses of the *palpi*, some considering they used them in tightening their lines, others in securing their prey. The author did not, however, consider these opinions correct, and detailed several elaborate experiments on the animals in question, from which he came to the conclusion that they were organs of reproduction. The species of spider he chiefly selected for experiment was the common house-spider. Prof. Owen did not wholly agree with the author, and instanced some singular facts in the history and habits of the spider, especially their well-known ferocity. He then entered into several curious details in the anatomy of the *aphides*, or blight insects, giving many particulars of the eggs and their mode of multiplication by division. He inquired if any point in vegetable physiology could throw any light on the subject of their development. Dr. Lankester quoted an instance of a plant of the *Euphorbium*, or spurge family, in which the stamens were absent, as analogous.

2. The secretary read a paper from the Rev. B. J. Clarke, containing an enumeration of about twenty species of the genus *Limax*, two of which were new to Ireland, and did not at present exist in the British Fauna. Prof. Forbes pointed out the importance of such a paper, and eulogised it as one of the best which had been written on the genus *Limax*, which forms an important link in the scale of creation.

3. Dr. Allman, of Dublin, gave an elaborate description of the anatomy of the *Plumatella repens*, a small fresh-water polype found in the royal canal, Dublin. He described, by the aid of a coloured diagram, the microscopic anatomy of the animal. A conversation took place between the author and Prof. Owen on the details brought forward in the paper, in which the professor elucidated the progressive development of some of the lower classes of animals, and also stated his conviction that the *Plumatella* was a low form of a highly developed series of animals. Prof. Forbes, in answer to a question from Mr. Patterson, gave some details, from which it appeared that the phosphorescence of some sea-molluscs was owing to small crustaceous animals which inhabit them,—they used them as a coach to travel in.

4. Mr. Peach's report on the Marine Testacea.

Purpura lapillus.—In my last communication, I had observed these shells depositing their nidi from January to June. I am now able to state that they do so all the year round, but are most active from January to April. The young leave the nidi in about four months from their being first deposited. My oldest boy in my presence had one of the nidi deposited in his hand by one of the purpuræ on taking it from the rock. The nidus was perfectly formed, quite transparent, and shewed the granular marks; but was so frail that it burst on being touched.

Buccinum reticulatum.—Deposit their nidi on weeds and stones, and on the wicker "hullies" or store-pots of the crab-catchers; they are frequently strung together, and overlie each other like the brass scales on the strings used to tie on soldiers' caps; they are of the shape of the spade on playing cards. I assign these interesting things to this shell, from its being found in the "hullies" in abundance, and no other shell with it. They inhabit and deposit their nidi in-shore, but where the tide never leaves.

Turbo littoreus.—I was asked at Manchester "in what way the *Turbo littoreus* produced their young, as the 'sea cup' proved not to belong to them." I believe they deposit eggs very much like those of the land helices. I saw eggs exuding from one, and I frequently find clusters of similar eggs under stones where these shells frequent.

Patella lævis.—I have observed this shell in its various stages of growth all the year; and from a very careful examination, I see no reason to change the opinion given last year, that the *Patella lævis* is the young of the *Patella pellucida*, at least of the Cornish coast, never having had an opportunity of so closely observing these shells any where else.

Patella nubecula of Turton, *Fissurella nubecula* of Fleming.—Turton describes the margin of this shell "smooth," whereas it is beautifully indented; the perforation on the crown as "oblong oval," it is so internally; the outer part has tooth-like projections, one on each side, the other at one end; the outside is very rough and reticulated. In all probability Turton's was a dead shell from which he wrote his description. This shell is found on the rocks at low-water, and is also met with in deep

water. It is generally concealed amongst the weeds, and covered with slime. It is a rare shell.

Saxicava rugosa.—At the meeting at Plymouth in 1841, I heard it asserted that this shell is not an inhabitant of deep water. A fisherman brought me a slab of limestone which he had hooked up from 30 fathoms, four or five leagues from the Deadman, with these shells alive in it; they were strong and healthy, in several stages of growth; some of the old thick shells were dead, and their places occupied by a new generation. To shew that this stone was *in situ* before hooked up, one part appeared as if broken fresh from another; it was also covered with calcareous corallines, *Caryophilliæ*, *Thuciria*, *articulata*, *Plumularia myriophyllum*, &c.; thus shewing that depth of water has little to do with the existence of this shell, provided it can meet with its proper habitat, viz. calcareous rock.

Pholas lamellata, or, as it was formerly called, *Pholas papyracea.*—This beautiful shell is frequently brought in by the fishermen from deep water in red sandstone, of the same description as that in which they are found near Payington and Dawlish in Devon. Here again is another shell inhabiting deep water, which has been considered as only to be found in shallow water, in rocks occasionally left dry by the tides. It is interesting that limestone, red sandstone, and chalk, are met with in lines off the Cornish coast by the fishermen; the chalk is known to them by the name of "no rest." Great quantities of chalk-flints are thrown into the coves on the western part of Goran and eastern part of St. Michaels Caerhayes.

Pholas dactylus.—At Pridmouth cove, near Menabilly, the seat of William Rashleigh, Esq., there is a soft rock of clay slate, in which Pholades bore; from that place I obtained a large piece of the rock with these shells in it; these I kept alive in my house for a long time, and paid some attention to their habits; and although in all probability it is an old and oftentold tale, I offer these observations, never having seen any thing of the kind myself. The animal has two orifices which project out of the upper end: in one, which is plain in the margin, they apparently take in the water; the other is furnished with a number of protuberances, which remind me of the lashes of the human eye; for at times they are placed over the opening for the purpose of guarding it. They have seven large ones, these are again fringed, and they erect or depress them at pleasure. Between these large ones they have also four or five small short-pointed ones raised on a semicircle, and these they use similarly to the large ones. This orifice is much larger than the other, and from it they eject the water. On being touched, or the rock struck on which they are, they spout out the water, often to a considerable height: thus, as it were, to terrify their enemies. I dropped a small piece of stone (small enough to pass down the orifice if permitted) on the armed orifice; it was immediately stopped by the tentacula, and after a time thrown off with a jet of water; before doing so they contract themselves, as if to give greater force to their efforts. I frequently tried to drop in a stone, but invariably without success. They are very irritable, and will on being touched retire into their shells, and completely shut themselves in. They appear to delight in taking in and ejecting water, and kept it in constant motion, at times completely whirling it round the tub in which I kept them: it held about five gallons. At times they were very inactive, and would retire to their shells and remain quiet for hours. Although I tried many means to ascertain whether they turned round in their holes, I could not perceive the least movement to that effect. I marked the stone and laid things as marks, but invariably they remained in the same position. There were fifteen or sixteen shells of all sizes in the slab; I had them for more than a month. I found with the *Pholas dactylus* one living specimen of the *Pholas parva*. These specimens are not so long or fine as those found at Payington in the very soft red sandstone.

Serpulæ.—I just mention the cellular structure of the *Serpula triquetra* to call attention to the subject, to try to discover the utility of these cells. I believe some others are so, as well as the *triquetra*.

Professor Forbes expressed himself much pleased by hearing the observations in the paper, and said he had never before heard the nidus of the *Purpura lapillus* described, and he considered it an interesting addition to the history of shells. As regarded the author's opinion respecting the *Patella pellucida* and *P. lævis*, he could not altogether agree with him, but believed they were distinct, from having found shells of the *P. pellucida* of great size; still he must confess it was a difficult matter to distinguish where the difference commenced, as they were quite alike in their earliest stages. Respecting the *Saxicava rugosa* he was able to confirm the statement of the author, having found that shell in 70 fathoms water.

Mr. Peach stated that he was happy to meet with the approbation of the learned professsor so far as he had gone with him; and he would respectfully reply to his objection to the *P. lævis* and *pellucida* by stating that he had paid more attention to those shells than any other, and that he found the young shells from the size of a pin's head first in the fronds of the *Laminaria digitata;* and as they grew in size and strength, they might be found in the stem of the plant, and kept descending until reaching the roots, when they cut a road through the fibres, and finally took up their position at the foot. The traces of their passage might be observed on the stem, &c.

Prof. Forbes said that this circumstance was very striking and part of it new, still it required farther observation.

5. Mr. Humphreys read a catalogue of the mollusca of the county of Cork.

6. The secretary (Mr. Patterson) read a letter from Capt. Portlock, in which he pointed out the importance of Corfu as a station for marine researches.

7. Mr. Strickland read the report of the committee appointed to investigate the vitality of seeds. Dr. Daubeny, of the botanic garden, Oxford, was engaged in these researches. He concluded by inviting co-operation from every one who could either send seeds to Dr. Daubeny, or who possessed a garden and leisure. He was ready to furnish instruction.

SECTION E.—*Medical Science.*

1. Dr. Harrison on the cure of aneurism by pressure.
2. Dr. Pickells on the deleterious effects of the *Œnanthe crocata.*
3. Dr. Houston exhibited a new instrument for the extraction of calculus from the bladder.
4. Dr. Brooke's sounding-board adapted to the catheter for the detection of minute calculi in the bladder was exhibited, with the inventor's description.

1. Dr. Harrison's paper recommended the recurrence to pressure for the cure of aneurism, which had fallen into disuse since the time of Hunter and Scarpa, but had lately been revived by Sir P. Crampton.—Dr. Oliffe stated a mode of pressure practised successfully of late by Dr. Amusat of Paris, which consisted in grasping the artery with a tortion forceps, and compressing it for the space of five minutes at a time.

2. Dr. Pickells read a paper on the deleterious effects of the *Œnanthe crocata* or water-hemlock, commonly called water-parsnip, in the course of which he narrated several cases wherein death had ensued from young persons incautiously making use of it in the belief that it was what is commonly called the pig-nut. It was nearly as destructive to animals, as some which drank out of a pond near Mitchelstown, in which this deleterious root grew rather plentifully, were very dangerously affected by it.

3. Dr. Houston next exhibited a new and ingenious instrument for the extraction of calculus from the bladder, the invention of Mr. Maclean of Dublin.

4. Dr. Sargent read a letter from Dr. Brooke of London, enclosing an instrument to ascertain with certainty the presence of small calculi in the bladder; but unfortunately in its passage through the post-office it was broken in pieces, and a portion of it lost.—Adj. till Monday.

SECTION F.—*Statistics.*

1. Dr. W. C. Taylor, statistics of the silk and poplin manufactures of Ireland. (Mr. Atkinson of Dublin exhibited specimens of the manufacture in the room).
2. Mr. C. J. Peel on a natural relation between the anniversary season of birth and the season of death, which varies for each month of birth, and on a preponderant natural tendency to death in the anniversary of the natal month.
3. Dr. Bullen, statistics of the parish of Kilmurry.

1. Dr. Taylor opened his subject with an historical retrospect, glancing over the earliest notices of silk manufactures among ancient nations, and then spoke of the more immediate subject,—one not only of great local, but general interest.

The silk manufacture was introduced into Ireland by the French refugees, whom the revocation of the edict of Nantes compelled to abandon their country. It was the obvious policy of the government established after the revolution to afford every encouragement to these exiles, not only because they enriched their adopted country by the new branches of industry which they successfully established, but also because their passions and prejudices were enlisted in favour of that course of policy which William III. maintained against Louis XIV. There are no certain records for fixing the precise date when silk-weaving was first commenced in Dublin, but it is generally believed that an ancestor of the present respected family of the Latouches commenced the weaving of tabbinets, or poplins, and tabbareas, in the liberties of Dublin about the year 1693. A great and fatal error was made by the new settlers in the very outset of their career—they adopted the principle of excluding the native Irish from the benefit of all the improved arts which they introduced, refusing to receive any of them as apprentices. The manufacture was consequently an exotic forcibly prevented from taking root in the soil, and deriving its support chiefly from a system of artificial patronage. So weak, indeed, was it, that in 1733 the Irish manufacturers of silks and stuffs waited on Archbp. Boulter, who then virtually ruled Ireland, to obtain his influence in passing a law to prohibit the weaving of East India goods. The Irish legislature saw this weakly condition of the manufacture, from the introduction of which great advantages had been not unreasonably expected, but could not discover the proper remedy. It attempted to supply the want of a home-market by protecting duties, bounties, and premiums; these, for a season, stimulated the trade into deceptive and unhealthy activity, but in the end aggravated the evil, because

it was clearly impossible to create customers by act of parliament. In the year 1764 an act was passed to place the silk-trade under the direction of the Dublin society, as far as it extended, within two miles and a half round the castle; and the society was empowered to make such laws and regulations for its management as they should deem necessary. To encourage the manufacture, the society immediately established an Irish silk-warehouse in Parliament Street; and the management of it was placed under the superintendence of twelve noblemen, who were appointed directors, and a committee of twelve persons, annually returned by the corporation of weavers, to examine the quality of the goods sent in by the manufacturers, to whom the Dublin society paid a premium of five per cent on all sales made in the house. It has been generally asserted that under this system of management the silk-trade obtained a high degree of prosperity. In a paper furnished to the hand-loom commissioners it was stated, that in the year 1775 there were 3400 looms in Dublin in full employment, and that, in addition to weavers, there were engaged in the manufacture,

1700 winders;
200 female throwsters, earning 6s. a week;
340 dyers;
200 quill-winders and draw-boys;

which, added to the 3400 weavers, gives a total of 5840 employed in the whole or mixed silk-manufacture. That this return is grossly exaggerated will, I think, appear obvious from the following considerations. In the thirteen years from 1752 to 1764 the average imports of silk into Ireland were,

15,760 lb. manufactured,
48,132 lb. raw,
275 lb. riband.

In the corresponding period from 1765 to 1777, when the bounty-system was in full operation, the following were found to be the averages:—

18,200 lb. manufactured,
45,990 lb. raw,
1068 lb. riband.

That is, the imported fabrics had increased, while the raw material to be worked up in Ireland had diminished. Arthur Young, in 1777, found that the stock of silk on hand in the society's warehouse was generally worth about 12,000*l.*, and that their average weekly receipts were only 150*l.*, or 7800*l.* per annum; and for the management of such a trifling business more than 500*l.* a year was expended in rent and salaries. The obvious intention of the measure was, to take the weavers out of the hands of the mercers and wholesale dealers, so as to help them to bring their goods to market without paying an intervening profit to the capitalist; and the necessary result was, that so far as the society succeeded, it banished capital and intelligence from this branch of industry. In fact, we find from parliamentary documents that in 1784 there were only 800 silk-weavers at work in Dublin, and that even these were not all in constant employment. In 1786 parliament withdrew its support from the society's silk warehouse, and the trade appeared to revive, for in 1791 there were 1200 silk-looms employed. The war with France, raising the price of the raw material, was a severe blow to the silk manufacture of Ireland: it is stated in a petition presented to parliament in 1793, that in that year nine-tenths of the looms were standing idle, and that all who depended on the silk-trade for support were reduced to the greatest possible distress. The trade was altogether suspended by the insurrection of 1798; and in 1800 it was deemed necessary to protect it by a duty of 10 per cent on the introduction of foreign and British silks. Soon after this the silk manufacture began to be established in Lancashire and Cheshire, while in Ireland the trade was severely injured by combinations and trades-unions. Several excellent workmen, unable to endure the arbitrary regulations established by these self-constituted bodies, removed to England; and at this hour there are more Irish than English engaged in silk-weaving at Macclesfield. In 1826 the protecting duties expired; and as the silk-weavers refused to modify their arbitrary laws so as to meet the altered circumstances of the times, whole silk-weaving was destroyed as a branch of industry in Dublin, and the prospects of its revival appear to become less every day. The poplin, or tabbinet manufacture, in which the weft is worsted, is always classed with the silk-trade in the returns made to the Irish parliament. Through the kindness of the Messrs. Atkinson, I am enabled to furnish the following particulars of its present condition to the section:—There are at present about 280 men and 70 women engaged in the poplin manufacture, assisted by 130 children, employed in winding the bobbins or quills for the shuttles, at ages varying from 7 to 13 years. A young person from 15 to 17 years of age can weave plain poplins as well as an adult; and as the rate of wages in any branch of industry will be measured by the lowest amount of strength and skill necessary for successful production, it is obvious, like most other branches of hand-loom weaving, the poplin manufacture must yield lower wages than trades requiring a greater amount of energy and capacity. Weavers are paid by the piece at the rate of from sixpence to eightpence-halfpenny per yard for plain, and a shilling per yard for Jacquard goods. They are only employed during nine months of the year, when they earn from twelve to seventeen shillings per week on an average, or from nine shillings to twelve and ninepence per week on the average of the entire year. From the hand-loom weavers' report it will be seen that there are some difficulties in procuring accurate information on the exact net amount of wages, because reductions are to be made from the weaver's actual receipts for winding, loom-rent, fuel, soap, house or room-rent, &c.; and it seems probable that some inaccurate information was given to the commissioners, from the desire of the operatives to make out a case for some intervention of parliament or the government in raising the rate of wages. Those who have been engaged in similar inquiries must know the difficulties which arise from the operatives not regarding labour as a commodity, the price of which can only be regulated by the relations between demand and supply; but this is more particularly the case with the silk-weavers of Ireland, because under the Spitalfields act the regulation of wages and disputes between masters and workmen had been subjected to the control of the Royal Dublin Society, and the mischief of such a system of intervention is not yet thoroughly understood. Women earn from four to nine shillings per week in silk-winding, working from twelve to fourteen hours per day. Their earnings vary with the nature of the machines on which they work. It is stated in the report of the hand-loom weavers' commission, that the combined weavers object to any improved winding-machines being introduced by the master manufacturers, as they believe that improvements in machinery tend to lower the money-rate of wages. Children earn from one to two shillings per week. As the poplin manufacture is a very limited branch of industry, the society of operative weavers has been able to maintain a fixed and uniform rate of prices for several years; and the master manufacturers generally concur in the system, because in an article of limited consumption, the use of which is exclusively confined to the wealthier classes of the community, it is of far greater importance to maintain the acknowledged superiority of the article than to produce it at a lower cost. The greatest improvements in the manufacture have resulted from the introduction of the Jacquard loom, and from a machine of recent invention for introducing a variety of colours in fancy brocading by a more effective process than that which was anciently employed. Specimens of the different modes of brocading are before the section, and it is impossible to examine them without admiring the exquisite taste and skill displayed in the more recent patterns. In what are called French poplins, cotton is very freely introduced; and though they are thus rendered much cheaper than the Irish, they are obviously inferior in richness and beauty, and they have been found still more so in permanence of colour and durability of material. The Irish poplins are highly esteemed abroad; and they are occasionally ordered in limited quantities for the principal continental courts, the United States of America, and the East and West Indies. The trade has been tolerably steady and stationary for the last seven or eight years, and it does not seem capable of much further extension. Silk has not been thrown in Dublin since the year 1837; it is chiefly imported from England, and the consumption of organzine is estimated at about 18,000lbs. annually. There are about 240 poplin-looms in Dublin, 20 velvets, and a few furniture tabbareas; so that the poplin may be regarded as the only branch of silk manufacture which has a healthy existence in Ireland.

In their moral character there is no body of operatives in the empire that takes a higher rank than the weavers of Dublin: though the temptation to embezzlement from the value and portability of silk is very great, it has been stated on the highest authority that cases of fraud are almost wholly unknown. In their social habits they are generally more refined than other artisans of their rank; they are usually instructed in the ordinary branches of learning, and are all anxious to communicate the blessings of education to their children. It has been already stated that the high price of the fabric must always restrict the manufacture of poplin within what large mill-owners would consider exceedingly narrow limits, particularly as it is believed impossible to apply power successfully to this species of weaving. Like all the branches of trade which supply what may be called the market of fashion, it must be liable to occasional vicissitudes arising from changes in the public taste, or perhaps we should rather say public whim and caprice. It is therefore pleasing to find from the specimens before us, that it allows of a limitless variety in pattern and colour, and that some of the brocades may safely claim a rank among the productions of the fine arts, from the beauty of their design and the exquisite accuracy of execution. Comparing the recent with the more ancient brocades, it is gratifying to observe that skill has been combined with perseverance in bringing them to their present state of perfection; and it is scarcely possible to doubt of the vitality of a trade where intelligence in the master and skill in the workmen have combined with honourable industry in both, to bear it safe through many an adverse crisis, and many a perilous season of commercial depression.

2. This paper was almost a jest; and the author being dead, it was not possible to make it a very lively one.

3. Of Dr. Bullen's paper the chief features were, that the rural parish to which his researches applied contains 10,778 acres, and a population of 3689 individuals; of the farmers there are 109 yearly tenants. Those holding by lease or written engagement, for a life or lives, or short term of years, amount to 63. Nine farmers hold, each, for over 200 years; 24 for 100 years; 28 for 70 years; 29 for 50 years; 34 for 30 years; 23 for 20 years. The parish of Kilmurry and three other parishes constitute a union of parishes, according to the regulation of the Catholic church: population 9000. From June 1842, to June 1843, were baptised 153 males and 128 females; two of this number were illegitimate. The average rent of land is 16*s.* per acre; the rent and taxes about 20*s.* per acre. There are five private schools; and some of the children attend school in the neighbouring parishes. The number of children at school is 423. In the parish are 800 who can read and write; 166 who can read, but not write. In four years the public-houses have been reduced to 5 from 11; and these 5 are partly supported by sale of huxter's articles, along with spirituous liquors. Drunkenness and faction-fights exist no longer in this district. Nine only of the natives of the parish subsist by begging; and there are none of them in the workhouse. Generally the poorest people have some fixed residence. The wages of men-servants is about 4*l.* a year on an average; those of women-servants 2*l.* The erection of a labourer's cot costs about 6*l.* There are 73 tradesmen, of these the greater number belong to the carpenter and shoe-making classes.

In the course of the desultory discussion which followed this paper, the Rev. Mr. Kelleher condemned the operations of the loan-fund system in rural districts.—It appeared also that English muslins were now sent to be wrought in Ireland, to the extent of 20,000*l.* per annum.

SECTION G.—*Mechanical Science.*

1. Mr. Hawkins on a new oil for lubrication.
2. Mr. Russell on the application of some known laws of sound to the construction of buildings.
3. Mr. E. Hodgkinson, report of experiments concerning the imperfect elasticity of solid bodies, and the practical results to be deduced from them.
4. Mr. Taylor on the mammoth steam-engine now constructing for draining the lake of Haarlem.
5. Mr. J. P. Booth, revolving inclined plane for raising and lowering miners, &c.

1. Mr. Hawkins stated that he had been lately informed by an intelligent settler on the banks of the Mississippi river, United States of America, that many of his neighbours were going largely into the production of lard oil, which is found to be much better for the lubrication of machinery than sperm oil, now so generally in use for that purpose. That the expense of producing this oil is singularly small, and considerable exportations to the manufacturing countries may shortly be expected at very low prices. That the mode generally pursued is, to drive a thousand, more or less, of little pigs into the woods to feed themselves on acorns, beech-mast, &c., for nine months, during which time they grow into large hogs; they are then driven into the farm-yard and fattened upon Indian corn or maize for a month, at the end of which period they are killed, and the whole mass, fat and lean together, boiled into lard, except when hams are in demand for exportation, in which case they are cut out and sold separately; that the scraps left after the lard is pressed out bear a very small proportion to the previous weight of the hog, much the greater part being converted into lard. That the lard is then mixed with a certain proportion of alchohol, and subjected to heat, which separates the mass into stearine and ealine,—the stearine being of a consistence similar to spermaceti, is manufactured into candles; and the ealine is the lard oil, the principal product, from which great profit is expected.

Mr. Taylor said the reason why spermaceti oil is used is, that it does not deposit wax. There is a method in practice to free this oil from the sperm which it contains—that is, by exposing it to the action of frost, and again melting it with a temperature of 40° Fahrenheit; the result is, that it deposits the sperm. It is a curious fact that nature has provided, that the fat of animals and of vegetables is in accordance with the nature of the climate.

Mr. Hawkins remarked that several watchmakers are in the habit of freezing their oil, and then melting it at a low temperature.

2. Mr. S. Russell communicated to the section a paper on the application of our knowledge of the laws of sound to the construction of buildings. It is well known, as he stated, that the adaptation of buildings to the purposes of seeing and hearing, to the accommodation of speaker and hearer, was one of the most important tasks of the architect, and also one in which he was least successful. The blame of this subject was by no means to be laid on the architect exclusively, as had been too often done, but was at least equally to be shared by the man of science, whose duty especially it was to determine the laws of sound, and to develop their application in such a manner that the architect should have nothing more to do than simply to consult a scientific treatise, in order to find all the principles and maxims which should direct him in this important branch of acoustics. This, however, had not hitherto been sufficiently accomplished. The object of this paper was twofold. First of all, to apply our knowledge of the known laws of sound to the phenomena of speaking and hearing, in a given building; and, secondly, to develop certain laws of sound recently discovered and not generally known, and to shew their application to the same practical purposes. Part 1 of the paper consisted of the application of the known laws of sound to the construction of buildings. The author prefaced this part of the paper by describing a form of building which had been found to be perfectly adapted to the purpose of seeing and hearing with distinctness and comfort, and which appeared to combine, in a great degree, the requisites of such a building. This arrangement of building had been described by him in a paper communicated to the Royal Society of Arts of Scotland some years ago, but had not been actually constructed on a large scale until lately, when a young and clever architect, Mr. Cousins of Edinburgh, having been employed to construct some large buildings, felt the necessity of studying the question of sound as an element of construction, and, lighting on this paper, adopted its principles as his mode of arrangement. Buildings had now been erected on this principle, which contained from fifteen hundred to three thousand people, whom they perfectly accommodated, without difficulty, and with perfect comfort both to speaker and hearer. He had little doubt, from experiments he had recently made, that so many as ten thousand people might be so arranged as to hear a good speaker with ease and comfort. The principle of Mr. S. Russell's construction is, to place the speaker in the focus of a curve which he calls the curve of equal hearing, or the isacoustic curve, and to place the seats of all the auditors in such a manner that their heads shall all be arranged in this curve. Such is the vertical section of the building. The horizontal section was either circular or polygonal, having the speaker at the centre. This form had been found perfectly successful in affording the highest degree of comfort both to the hearer and speaker, and therefore he submitted it with confidence to the section as a practical and established principle more than as a mere theoretical speculation.

The writer next proceeded to investigate the nature and causes of such evils as are found in buildings of the usual forms. One class of these evils arose from the known laws of reflexion of sound; a second class from the spontaneous oscillations of the column of air in the room. From this phenomenon he was enabled to explain the fact, that, in the generality of buildings, there existed a certain key-note or pitch in which the voice of the speaker is best heard. He shewed how it was possible to predict what the key-note of a building would be, and gave rules by which a speaker might ascertain that pitch. A third class of evils arose from the phenomena of interference of sound; and the author pointed out the forms which were most liable to this evil. In one case he stated that a building, constructed at the expense of the government expressly for the purpose of accommodating a large assembly, had been found so utterly unsuitable that it had been abandoned, and a new one, at a great expense, erected in its stead. The evils in this case were those of the second and third class.

In part 2 the author explained certain new phenomena in sound which he had recently discovered. He had been engaged, in another section of this Association, in the examination of water-waves; and, from the phenomena discovered in these waves, he had been led to take a new view of the phenomena of the sound-wave. He had found in the water-waves of the first order certain phenomena, which he denominated *polarity*, *lateral accumulation*, and *non-reflexion*; and on examining the phenomena of sound, he found there analogous phenomena. By this means he was enabled to explain many phenomena of sound hitherto anomalous, and to discover the cause of certain evils in buildings which had not been formerly accounted for. The phenomena of whispering-galleries, and the reverberation of sounds along the walls of buildings, he explained, and shewed the method of remedying. By the form which he described, these evils might be remedied in old buildings, and avoided in such as were still to be constructed.

3. Reported in Section A. on Saturday, where the paper was repeated.

4. Mr. Taylor described this immense machine.

5. Mr. Booth exhibited and explained a model of a revolving inclined plane for raising and lowering miners, &c., exhibited at the Corn Exchange. The object was to raise and lower miners, goods, &c., without any exertion on the part of the former. It consisted of a revolving inclined plane or screw shaft, working against the periphery of wheels attached to a box which was lowered in the shaft; the principle was similar to that of the common screw-jack.

Mr. Taylor had just returned from Cornwall, where he had seen a new invention to raise and lower the miners, which he thought preferable. By it 130 men could be raised at the same time that a similar number could be lowered. Mr. T. foresaw some difficulty in extending the

screw sufficiently to answer in deep mines. The machine which he had seen lowered the miners 284 fathoms in 26 minutes. The cost was 3000*l.*, but this would be paid in a very short time by the saving of labour.

Friday Evening.—The *soirée* was well attended; and a kindly intercourse established among the visitors and their entertainers, by means of many introductions of individuals and groups hitherto unknown to each other. Refreshments were visible in a second room, into which, however, we did not push our inquiries. The ordinaries were apparently amply provided, but miserably ill served. Waiters, undrilled, ran about attending to nobody; and an admired confusion of sauces without meat, and meat without condiments, was the consequence. Throughout the two days we were partakers, we could not help laughing instead of eating, and thinking of Petruchio's feast offered to Katherine, of the mustard without the beef.

SATURDAY.

SECTION A.—*Mathematical and Physical Science.*

1. Dr. Apjohn on the correction of the barometric formula for hygrometric moisture.
2. Mr. J. Scott Russell, report on the tides of the Frith of Forth, and of the east coast of Scotland.
3. Mr. Eaton Hodgkinson, experiments to prove that all solids are in some degree inelastic, and a proposed law for estimating the deficiency.
4. Dr. Robinson, report of progress in experiments with captive balloons.
5. Mr. E. J. Cooper, catalogue of fifty stars in the vicinity of the pole.
6. Sir David Brewster, reports of the committee for conducting meteorological observations at Inverness and Unst.
7. Sir David Brewster, report on the action of different bodies on the spectrum.

1. Prof. Apjohn explained a subject of some theoretic and practical interest, viz., a mode of applying to the barometric formula a correction for the moisture always present, in greater or less amount, in the atmosphere. He commenced by giving the formula in its simplest form, and by shewing that this required to be corrected, not only for the difference of the mean temperature of the column of air between the two stations and 32°, but also for the aqueous vapour with which this column is charged. The presence of this vapour produces, as we understood him, a twofold effect: it augments the pressures at each station, beyond what they would be in dry air, by the full value of the tensions of the vapour at these stations, and it augments, on the principle of the well-known formula, $v = v \times \frac{\pi}{\pi - f'}$ the volume of the air, π being the pressure, and f' the force of the vapour which the air contains. Assuming, then, p to be the observed pressure, t the temperature of the air at the lower station, t'' its dew-point, and f'' the force of the included vapour, and that the corresponding quantities at the upper station are p', θ, θ'' and F'', the author of this communication proceeded to shew, by going through the successive steps of the calculation, that the true difference of level of any two stations in the atmosphere is correctly represented by the following expression:

$$D = m \times log. \frac{p - f''}{p' - F''} \times \frac{461 + t}{493} \times \frac{\frac{1}{2}(p - f'' + p' - F'')}{\frac{1}{2}(p - f'' + p' - F'') - \frac{1}{2}(f'' + F'')}$$

In arriving at this formula, the correction for temperature is incorporated with that for moisture, and, in order to obtain the latter, the temperature, tension of vapour, and pressure of the column of dry air, represented by the approximate formula $D = m \times log. \frac{p - f''}{p' - F''}$ are assumed to be the arithmetic means of the corresponding quantities at the upper and lower stations. The mean temperature of the air has always been assumed to have such a value, and the same must be as true of the tension of the aqueous atmosphere. The professor, however, stated, that when the mean pressure of the column is calculated on such principle, the result may differ somewhat more from its true value. The exact value, indeed, of the mean pressure to be used in the formula might be calculated, but he abstained purposely from employing it, as, while it would add much to the complexity of the barometric formula, it would not render it appreciably more accurate. The amount of the correction for moisture was stated to be very far from what might be considered as a negligible quantity; and this he illustrated by assuming the mean force of vapour to be but 3-10ths of an inch, and the mean pressure to be 27·3 inches, values which may be frequently encountered in the barometrical measurements of mountains in this country, and which would make the correction for moisture $\frac{3}{27 \cdot 0} = \frac{1}{90}$th of the uncorrected height, or 30 feet in a mountain 2700 feet high. Professor Apjohn, in conclusion, drew the attention of the section to the fact of the correction for moisture being always positive or additive, while that for temperature may be additive or subtractive. From this it obviously follows, that the heights given by the barometric formula, in the condition in which it has been hitherto used, should be less than the truth; and he stated, that in levelling with the barometer certain hills whose elevations are given in the Irish ordnance survey, he found such to be the case.

2. This report was brought up by Mr. Scott Russell, who introduced it by paying a well-merited tribute of respect to the memory of his former coadjutor, the late Sir John Robison, in whom he had to regret a warm friend, and the Association a zealous and valuable member. The observations conducted by the committee had been carried on through a considerable period of time, in order to afford the means of solving satisfactorily the difficult questions to which they had given rise. The first observations satisfactorily ascertained the existence of certain anomalous tides in the river and frith of Forth, which had not formerly been accurately examined: by continuing these observations the exact nature and extent of these extraordinary tides had been sufficiently ascertained. But it was only recently that a sufficient number and adequate kind of observations had been made, satisfactorily to elucidate the origin and determine the causes of these anomalies. The result of the whole had been to throw much light on the nature of the tidal wave—to explain satisfactorily some very remarkable phenomena, and to furnish the means of more accurately predicting the tides of the east coast of Scotland. The method used for observing the tides in these observations was not the usual one of merely noting down the hours of high and low water, and the heights at which the high and low water respectively stand. The usual method would have been found in this case, as it has been in many others, totally inadequate to the explanation of the various phenomena of the tides; and he thought it of importance that all tide-observations should, if possible, be conducted on the plan he was about to describe, especially those designed for scientific purposes. There were carried on simultaneously, at all the places examined, a series of continuous observations, every five minutes, night and day, for several weeks or months, as required. Printed forms were sent to all the stations, and in them the observer simply noted down, every five minutes, the height of the tide as he observed it on a graduated scale, placed in the water beside him. Every day at noon these papers were all sent by post to a central station, and immediately on their arrival were compared together, and laid down on ruled paper, so as to give a graphical representation to the eye of all the observations, by means of which they were at once verified and examined and discussed with precision and ease. Accuracy of observation was by this means ensured, by the difficulty, almost amounting to impossibility, of fictitious interpolation.

Simultaneous observations had been conducted in this way at nearly twenty stations on the east coast of Scotland, from Newcastle to Inverness—including Newcastle, Shields, Berwick, Dunbar, Leith, Queensferry, Borrowstonness, Alloa, Black Grange, Stirling, Charlestown, Inchkeith, Elie, Craill, Isle of May, Dundee, Perth, Montrose, Aberdeen, Inverness, &c. The results of these were exhibited in the tables and diagrams accompanying the report. From the examination of the form of the tide-waves thus obtained, certain characters of tide-wave, peculiar to certain localities, had been discovered. In former observations by the author of the report, published by the Association, it had been ascertained that the channel of a river, such as those of the Dee and Clyde, produces important changes on the form of the tidal wave propagated through them from the sea. Where the sea was deep and the shore open and bold, the form of the tide-wave was symmetrical and conformable to that predicted by Laplace, when he says that in rising and falling the sea covers in equal times equal arcs of a vertical circle. But in shallow water, and travelling along a shelving coast, the tide undergoes a change—its summit becomes displaced in time, its horizontal chords become dislocated, and the curve ceases to be symmetrical. In rivers, the current produces the further phenomena of distortion and exaggeration. All these changes were fully established in the present series of observations.

The author next proceeded to explain the mode of discussion which had been adopted, and the results to which he had been led; one of the most remarkable of which was, that it appears conclusively established, according to the author's former views, that two independent tide-waves visit certain parts of the east coast of Scotland, one the great northern wave which brings the usual high water to the east coast of Britain, and a southern tide-wave which produces the anomalous tides of the Frith of Forth. By means of these observations there had also been formed local tide-tables for the east coast of Scotland.

3. Mr. Hodgkinson's experiments appear to render necessary the re-examination of all calculations for stress and strength of materials; the elastic curve computed by Legrange and Euler, the mathematical rules given by Tredgold and others, Poisson's treatment of molecular forces, and all computations grounded on the perfect elasticity of bodies, can henceforth be considered as approximations only. His practical investigations shew a defect of elasticity existing not merely when the compression and extension are considerable, as hitherto supposed, but commencing with the smallest change of form, and increasing as the square of the extension. This law holds good when the body is subjected to extension or compression alone; but when both are in operation, as in the case

of a rectangular bar deflected, the defect of elasticity varies as the square of the weight. This ratio to the extent of deflection is slightly extended by time, and there appears to be a departure from the law on approaching the breaking weight; but in every case of deflection there results a permanent set, a permanent change of form, the material bent never coming back to its normal state. Applied to axles of locomotive engines, once bent, the lower side presenting extension, the upper compression, the defect of elasticity produces molecular disturbance in the centre. Again, bent the other way,—and this is constantly occurring from the motion of the carriage,—the changes are reversed; but again, owing to the permanent set arising from the defect of elasticity, change in the arrangement of the particles of the material takes place, and this process of destruction is always going on.

Dr. Robinson, Prof. M'Cullagh, and Sir W. Hamilton spoke to the high value of Mr. Hodgkinson's communication, and to the importance of extending the experiments.

4. Dr. Robinson reported that the balloon and other requisite apparatus for conducting experiments on the physical constitution of the atmosphere were nearly completed, and that he hoped the observations would be commenced in September next. The committee had been liberally assisted by the directors of the gas-works at Woolwich. The balloon, provided with Wheatstone's electric thermometer, which we have before described (see *Lit. Gaz.*, No. 1372), is to be raised, in the first instance, to an elevation of 1000 yards, and secured by 3 moorings. The variations of temperature will be evidenced to and registered by the observer at Woolwich every 3 or 5 minutes at will.

5. Dr. Robinson also communicated the astronomical labours of Mr. Cooper, and eulogised the perseverance and liberality with which he devoted his talents, time, and fortune, to the advancement of astronomical science. He characterised his private observatory at Nice as the noblest in Europe, and described the enormous powers of Mr. Cooper's transit instrument. The number of reduced stars near the pole, the skymarks of astronomers, have been hitherto limited in catalogues to the polar and two others, the difficulty and labour of reduction being very great. To these Mr. Cooper has now added 50, and some in his list are 30 times brighter than the polar-star. The 50 happily, said Dr. Robinson, group into a form closely resembling the shamrock, and he hopes that they will be designated by that title. Thirty more stars are in progress of reduction.

6, 7. The reports of Sir D. Brewster were merely of progress, and requesting extension of grant. The want of sunshine at St. Andrews during the year had interfered with the latter investigation.

SECTION C.—*Geology and Physical Geography.*

1. Mr. Phillips, a notice of the Ordnance Geological Museum.
2. Mr. Binney on the junction of the lower new red sandstone and coal-measures at Collyhurst, near Manchester.
3. Mr. Murchison on a proposed classification in the red sandstone series above the coal-formation.
4. Mr. Hopkins on the motion of glaciers.
5. Report of the committee appointed by the British Association in 1842, for registering the shocks of earthquakes in Perthshire.

1. Mr. Phillips described a museum now forming for the reception of geological specimens, and the issue of a cheap publication with engravings of geological organic remains. By means of electrotyping, examples of which he exhibited, as well as small boxes of fossils, the science would be placed readily within the reach of every one who desired to study it.

2. Mr. Binney's elaborate paper demonstrated the contact of uncomformable strata, and remarked on the sites of some large boulder-stones, which seemed to impeach existing opinions.

3. When first proposed by Mr. Murchison, the word *Permian* was intended to distinguish a natural group of deposits lying between the well-known carboniferous strata beneath and the less perfectly defined trias above it. The author at first suggested that the group, so designated from the ancient kingdom of Permia, which is exclusively occupied by it, should combine those deposits known under the name of rolite-todte-liegende (lower new red of England), kupfer-schiefer, zechstein, &c. (magnesian limestone, &c.). Subsequently, however, he was disposed to doubt whether it might not be more correct to class the rolite-todte-liegende with the coal-bearing deposits beneath it than with the zechstein, because the plants of the lower red sandstones could not be distinguished from those of the coal-measures. Revisiting Hessia, Saxony, Silesia, the Thuringerwald, and other parts of Germany, during this spring and summer, Mr. Murchison has obtained what he considers satisfactory proofs that the rolite-todte-liegende is part and parcel of the same natural group as the zechstein, and must therefore be considered a part of the Permian system. He has also convinced himself that the great deposit, hitherto known under the term of bunter-sandstein, gres bigarré, or new red sandstone, should be divided into two parts; the lower of which ought to be classed with the Permian, and separated from the trias, with which it had been merged. To prove the first of these positions, or that the rolite-todte-liegende is a part of the Permian group, Mr. Murchison cited the order of succession in numerous sections in Germany, shewing an uninterrupted sequence from the lower red conglomerate sandstone and shale into the overlying zechstein. It was then stated that this red deposit, so copiously developed in Saxony, was there invariably separated from the underlying coal-fields by unconformability to those strata, or by occupying irregular and corroded depressions on their surface. These facts have recently induced Prof. Naumann and the Saxon geologists to disconnect the rolite-todte-liegende and their productive coal-measures: on the other hand, the rolite-todte-liegende, or lower new red, passes up into the zechstein. The question then is, can the plants of these lower red rocks be distinguished as a whole from those of the subjacent coal-measures, plants being as yet the only organic remains found in them? From this, observations in Saxony, and particularly from an inspection of the fossil-plants collected and partly described by Captain Gutbier, Mr. Murchison believes that such a separation exists. For, although the general character of the flora of the one deposit agrees with that of the other, it is a remarkable fact, that in the tracts around Zuickan, which are marvellously rich in coal-plants, certain striking forms are found in the rolite-todte-liegende which never have been detected in the subjacent coal-strata. Among these are forms of *Neuropteris* closely approaching to, if not identical with, those species which occur in the Permian rocks, whilst there is no trace of the common plants of the underlying coal. These plants, being imbedded in a whitish or cream-coloured finely levigated clay-stone, and their leaves being brought into beautiful relief by being invariably as green as if they had peculiarly and happily dried in an herbarium, form admirable subjects for the most precise distinctions of the fossil-botanist; and through the kindness of his Saxon friends, Mr. Murchison hopes to lay some examples of them before the Geological Society of London.

In Silesia (at Ruppendorf and other localities west of Waldenburg, between Breslau and Glatz) there is a fine development of strata from the base of the rolite-todte-liegende (where that deposit overlies a productive coal-field, based upon true mountain limestone) into other red sandstone and shales which have a marked aspect, from being interlaced with bands of black bituminous, thin, flaggy limestone. Though doubts had been entertained as to the age of this limestone, Mr. Murchison does not hesitate to consider it as the equivalent of the zechstein, and the whole red group of which it forms a member, as the Permian system; for besides its very clear position, this calcareous flagstone contains plants and fishes similar to those of the Permian rocks of Russia. Among the former, the *Neuropteris conferta, nov. spec.* of Göppert, has been identified with the most common fern brought from Russia. The most abundant fish is the *Palæoniscus Wratislabiensis*, Ag.

On this occasion Mr. Murchison passed rapidly over the zoological proofs that the zechstein and kupfer-schiefer of Germany are the equivalents of the calcareous beds of the Permian system of Russia, as these had been given in detail in memoirs read before the Geological Society, and will shortly appear at length in a work upon the geology of Russia. He stated, however, that his opinion was now perfectly in harmony with that of Mr. Phillips, viz. that the fauna of the zechstein or magnesian limestone has so much of the same general zoological type as the carboniferous limestone, that it must also form a part of the palæozoic series. He withheld his assent to this opinion formerly, because the rock in question contained saurian animals unknown in the lower palæozoic deposits, and also because the zechstein seemed to him more connected with the strata above it than the underlying carboniferous system; at that time, however, it was unknown that in Russia there were considerable masses of red sandstone (bunter-sandstein), marls of conglomerate *overlying* bands of limestone containing zechstein fossils, and also a group of plants and fishes identical with those in the underlying beds, together with the peculiar Thecodont saurians. Mr. Murchison then proceeded to consider the age of these lower beds of the bunter-sandstein, which had been hitherto included in the trias on lithological evidence only. They contain no fossils, either in Hessia, Saxony, or Thuringerwald, where the zechstein and kupfer-schiefer are most developed; and from all Mr. Murchison's inquiries and observations it appears, that the upper mass of the bunter-sandstein contains the remains of animals and plants analogous to those of the muschelkalk which rests upon it. The footmarks of the *Cheirotherium* appeared also to be confined to the beds of sandstone at a very little depth below the muschelkalk. From these circumstances, Mr. Murchison was induced to regard the upper beds alone of the bunter-sandstein as belonging to the trias; whilst the lower portion, which, though generally unfossiliferous, contained in Russia the same group of fossils with the Permian rocks, he proposed henceforth to separate from the secondary system, and to consider it, together with the zechstein and rolite-todte-liegende, as the upper member of the palæozoic series. Mr. Murchison also

mentioned, that in western Germany (as at Baden and Heidelberg) there were great masses of the rolite-todte-liegende resting upon the primary rocks of the Black Forest, passing up into the lower beds of bunter-sandstein without any zechstein intervening; although at Heidelberg that rock, as on the frontiers of France, was supposed to be represented by a thin band of dolomite.

The plants of the Permian system of Russia appear, from the opinion of M. Brongniart, to possess a peculiar character; but they are still closely allied to carboniferous forms, like the plants of the rolite-todte-liegende of Saxony; and this evidence is in complete harmony with that afforded by the mollusks, corals, and ichthyolites. In conclusion, Mr. Murchison remarked that the English strata, ranging under the synonym of Permian, formed a well-defined track, separating the coal-fields from the newer deposits of red sandstone and marl; and, as the magnesian limestone does not after appear in the form of a continuous deposit, it was the more desirable to give a certain latitude to this group, and not to define it too narrowly by mere mineral characters. Thus considered, Mr. Murchison believed the Permian system had a real existence in Ireland, being represented by those beds containing the *Productus aculeatus*, and probably also by the red sandstone with the *Palæoniscus catopterus* at Rhoan Hill, near Dungannon.

Mr. Griffith said that the red sandstone of Rhoan Hill belonged to the lowest part of the new red series in Ireland.

Mr. Phillips stated that the dolomitic conglomerate of Bristol rested unconformably on the mountain-limestone, and no further evidence of its relation to the magnesian limestone had been obtained by the Ordnance survey besides the saurian remains originally discovered by Dr. Riley and Mr. Stutchbury.

Mr. Lyell remarked that the similarity of the sedimentary deposits produced by rivers in different parts of the world at the present day afforded confirmation of the identity of distant deposits, having similar mineral character, and the same place in the series. He considered the occurrence of remains of Thecodont saurians in the Bristol conglomerate a strong proof that it belonged to the same age with the zechstein of Germany, containing a saurian presenting the same peculiarity of structure, namely, the dentition of the crocodile combined with the vertebræ, sternum, and extremities of the lizards. He also referred to the discovery of the tracks of a reptile, associated with a series of corals and shells, low down in the carboniferous series of Nova Scotia, the rocks in which they occurred being covered by a vast series of deposits containing a large series of plants, nearly every one of which was identical with species found in the English coal-measures.

Mr. Binney stated that footmarks of the *Cheirotheria* had lately been found in the middle of the bunter-sandstein of Cheshire, together with three fish belonging to the genera *Cælacanthus*, *Platysomus*, and *Palæoniscus*, scarcely distinguishable from coal-measure species.

4. Mr. Hopkins gave an exposition of his views respecting the cause of the motion of glaciers. De Saussure had adopted and expounded the theory which attributes this motion to the resolved part of gravity acting along the inclined surfaces on which all glaciers in motion repose; and he explained also how the motion would be facilitated by the effects of the internal heat of the earth, and of subglacial currents. When the attention of philosophers, however, was recalled a few years ago to this subject, and more accurate observations and admeasurements were made, the inclinations of the beds of glaciers were found, in many cases, to be so small (in the glacier of the Alesch, for example, not exceeding 3 deg.) that it appeared extremely difficult to conceive how the force of gravity alone could be adequate to overcome the friction on the bottom and sides of the glacier, and the numerous local obstacles to its movement. Numerous experiments on the descent of bodies along inclined planes had shewn, that, when the surfaces of the bodies and planes were perfectly hard and polished, no motion would ensue without an inclination considerably greater than that of many glaciers; and, moreover, that the inclination required to produce motion was independent of the weight of the sliding body. These considerations led to the very general rejection of De Saussure's theory, and to the adoption by many persons of the dilatation-theory, of which M. Agassiz had been the principal advocate. According to this theory, a part of the water produced by the dissolution of the superficial portion of the glacier during summer passed by infiltration into the minute pores and crevices of the glacier, when it was again converted into ice; and, by its expansion in the process of freezing, produced a dilatation and consequent motion of the glacier. It was manifest, however, that the frequent alternations of freezing and thawing within the glacier, which this theory assumed, could not possibly take place at depths beneath its surface exceeding a very few feet, and therefore could not produce any sensible effect on the motion of the whole mass. If the effect were referred to the freezing of water at greater depths, it could only be attributed at most to annual variations of temperature, and the consequent motion would take place during the colder season, or at its commencement, and not during the summer, when, as appeared by observation, the glaciers moved most rapidly. If, again, the dilatation were attributed to the freezing of the infiltrated water at still greater depths, where the temperature of the ice was unaffected even by annual variations of the external temperature, and where consequently it was necessarily constant, how, it might be asked, were the internal pores and minute crevices of the ice to be again formed, when the infiltrated and subsequently frozen water had once filled these up, as it must necessarily do before it could produce a dilatation of the mass? No adequate solution had ever been given of these difficulties, and the author could not but consider this theory as being contrary to the most obvious mechanical and physical principles; but while he expressed this opinion of the theory, he would also express his sense of the important service which its distinguished advocate, M. Agassiz, had rendered to geology by the penetration with which he had detected the effects of glacial action, and the steadiness with which he had maintained his general views on the subject. Another theory had also been put forward, which attributed the motion of glaciers to the expansion of water in the act of freezing after it had filled, not the minute pores of the ice, but internal cavities of considerable dimensions. But, since the temperature of the glacier at considerable depths must be sensibly constant, how were new cavities to be formed when existing ones were thus filled up, if the cause now assigned were the principal cause of glacial motion? The author always regarded both this theory and the preceding one as totally untenable; and was thus led to examine how far the apparent objections to De Saussure's theory were really valid by a series of experiments on the descent of ice down inclined planes. The experiments were made in the following manner:—a slab of sandstone, prepared to be laid down as a part of a common flagstone pavement, was so arranged as to be easily placed at any proposed inclination to the horizon. The surface of the slab, so far from being polished, retained the grooved marks of the instrument with which the quarryman had shaped it. A quantity of ice was placed on the slab, and within a frame nearly a foot square, without top or bottom, and merely intended to keep the ice together without touching the slab, with which the ice alone was in contact. The following were results obtained in one set of experiments, the ice being loaded with a weight of about 150 lbs.:—

Inclination of plane.	Spaces in decimals of an inch through which the loaded ice descended in successive intervals of ten minutes.	Mean space for one hour.
3°	·08 ·05 ·07 ·03 ·04 ·05 ·07 ·06 ·04	·31
6	·09 ·10 ·09 ·07 ·08	·52
9	·14 ·12 ·17 ·14 ·19 ·20	·96
12	·38 ·34 ·36 ·27	2·0
15	·43 ·41	2·5
20	The mass descended with an accelerated motion.	

When the weight was increased, the rate of motion was also increased: the least inclination at which sensible motion would take place was not determined, but it was ascertained that it could not exceed half a degree in the case of a smooth but unpolished surface. With a polished surface of a marble slab, the motion of the ice indicated a deviation from horizontality with as much sensibility as water itself. It will be observed in the results above given, that (1) the motion was unaccelerated; (2) it increased with the inclination, and (when the inclination was not greater than 9° or 10°) in nearly the same ratio; and (3) the rate of movement was of the same order of magnitude as in actual glacial motion, which may be stated generally, in cases yet observed, never to exceed two feet a day.

The extremely small friction between the plane and the ice indicated by the small inclination necessary to produce motion, was manifestly due to the circumstance of the lower surface of the ice being in a state of gradual disintegration, which, however, was extremely slow, as proved by the small quantity of water proceeding from it. In the application, therefore, of these results to the case of actual glaciers, it was necessary to shew that the temperature of their lower surfaces could not generally be less than 32° Fah. Such, the author stated, must necessarily be the case unless the conductive power of ice was greater than it was deemed possible that it could be. For the proof of this, and for other details, he referred to his memoir on the subject recently read before the Cambridge Philosophical Society. He also considered the subglacial currents as powerful agents in the disintegration of the lower surfaces of glaciers, especially near their lower extremities.

Soon after the reading of the memoir above referred to, a work had appeared on the glaciers of the Alps by Prof. Forbes, the descriptive details of which could not be too highly commended. The results of his observations on the motion of the Mer de Glace of Mont Blanc afforded, as regarded that glacier (and by inference as regards all other glaciers), a complete refutation of the theories which attribute glacial movements to any expansion or dilatation of the ice. In this work, Mr. H. stated, the professor had put forth a new theory, which agreed with that offered by himself in attributing glacial motion to the action of gravity, but

differed from it entirely as a mechanical theory in other respects. The author appeared to reject the sliding theory of De Saussure on account of the difficulties already mentioned (which were now removed by the above experiments), and assigned to the mass of a glacier the property of *plasticity* or *semifluidity* in a degree sufficient to account for the fact of its descending down surfaces of such small inclination. Thus, according to this theory, the motion was due to the small cohesion of one particle of glacial ice to another; while, according to the views now offered, the motion was due to the small cohesion of the lower surface to the bed of the glacier: the smallness of the latter cohesion had been proved by the experimental results above stated, that of the former appeared opposed to all observation, and was wanting in all experimental verification. Mr. H. stated his conviction that the internal cohesion of the mass was immensely greater than its cohesion to the surface on which it rests whenever the lower surface is in a state of disintegration. It was perfectly consistent with this conclusion to assign to the glacier whatever degree of plasticity might be necessary to account for the relative motions of its central and longitudinal portions, under the enormous pressures to which, according to his theory, he shewed it might be subjected. Such relative motions, however, were probably facilitated more by the dislocation than the plasticity of the mass. For a complete mechanical exposition of his views, he must again refer to the memoir already cited. Sufficient, he trusted, had been advanced to prove that the sliding theory assigned a cause adequate to the production of all the observed phenomena of glacial movements.

With respect to the transport of erratic blocks and detritus of the Alps to the Jura, Mr. Hopkins observed that the greatest height which glaciers had formerly attained in the valley of the Rhone (whence a large portion of the erratics had been derived) appeared to be well defined by lateral moraines and polished rocks, while the greatest height at which these blocks had been deposited on the Jura was also well defined. Thus, according to M. Charpentier, the Rhone glacier must have risen at the mouth of the valley to about 2500 feet above the existing surface of the Lake of Geneva, while the highest band of detritus on the Jura was stated to rise to a still higher level. It was inconceivable, therefore, that such detritus should have been lodged at its present elevation by former glaciers. The only way in which it appeared possible to obviate the mechanical difficulties of the subject was, to suppose the transport to have been effected when the Jura was at a lower level relatively to the Alps, and the whole district lower relatively to the surface of the ocean. In such case, the space between the Alps and the Jura may have been occupied by the sea, and the ice, with its transported materials, may have passed from the former to the latter chain, partly with the character of a glacier, and partly with that of an iceberg. This hypothesis is perfectly consistent with the supposition of the general configuration of the surface of the Jura having been the same at the epoch of transport as at the present time; and Mr. H. believed it would be found equally so with all the observed phenomena of that region.

Col. Sabine read a letter from an officer of the antarctic expedition, stating that in the lat. 79° they had met immense cliffs of ice, forming the sea-borders of an enormous glacier, above which, at a great many miles distance, the tops of the mountains were visible. The ice-cliff was constantly breaking and tumbling down, and the disjoined masses congregated and floated away to the north to the 60th degree of lat., where an enormous extent of icebergs were constantly to be found floating and not fixed to any submarine ridge. Here they were constantly depositing, by their dissolution, immense quantities of stones, earth, and other materials brought from the distant mountains of the antarctic region. The remarkable analogy of this great extent of glaciers and iceberg action to the presumed processes supposed to have taken place on the earth during the distant cold period, of which the traces remain in the elevated ridge of boulders at a height of 2500 feet above the present glaciers in the Alps, with the marks of scratching and polishing on the Alpine tops, and the erratic blocks scattered over the plains, seems almost to confirm beyond further question the truth of the inferences drawn from these data. Col. Sabine also read a letter, stating that in the mountains to the N.W. of Bantry numerous traces of former glacier-action were to be seen.

5. *Report of Committee (Dr. Buckland and Mr. Milne) appointed in* 1842 *for registering the Shocks of Earthquakes, and making such Meteorological Observations as may appear serviceable.*—During the last twelve months the earthquakes in Perthshire have been more quiet than usual. From the end of June 1842 only about thirty shocks have occurred at Comrie to the 1st July 1843. The dates and particulars, together with meteorological information, were submitted in tables. None of the Comrie shocks were so violent as to produce much, or indeed scarcely any, heave or undulation of the ground. They seem to have consisted of a sudden concussion only, accompanied by the usual trembling of the earth, and rumbling subterranean noise. If the suggestion that the rain which descends into the earth has some connexion with the causes of earthquake-shocks, perhaps the remarkable dryness of last autumn may in part at least account for the scarcity and slightness of the shocks at a season when they have been generally most frequent. On two occasions only, the height of the barometer was marked, Sept. 24, 1842, and March 23, 1842. On that of the latter, the height of the barometer was at the moment of the shock, at 8 P.M., 29·12, and of another shock at 11 P.M., 29·1; whilst the average height for that day was 29·26, and for the month 29·72. A similar fall below the average of the day was observed at the shock of the former date, and the committee regret that the barometer was not registered on the occasion of all the shocks: this instrument will be attended to in the observations of the ensuing year. The shocks felt in other places in Great Britain reported to the committee, were next mentioned in chronological order:—Aug. 19, 1842, at Piltochry, between Dunkeld and Blair; Aug. 22, North Wales, the east end of Anglesea was most affected; Feb. 25, 1843, at Oban and Lochgilphead, in Argyleshire, as also in the intervening district; March 3, 1843, at Lochgilphead; March 10, 1843, in the district north-east of Manchester, most violent in the chain of hills separating Yorkshire from Lancashire; March 17, 1843, the same district was again affected. This shock was felt simultaneously in Lancashire, Cumberland, Dumfriesshire, Isle of Man, Belfast, and even in the islands of Jersey and Guernsey; but, singularly, not in the intervening districts of the south and south-east of England. All originated in depths immediately below the respective portions of the earth's surface, and they do not seem to have any common bond of connexion; that is to say, a shock which rises up in any one of the districts is not felt in the others. The supposition that the shocks occurring in this country are produced by subterranean changes taking place in the volcanic regions of the earth, is not borne out. The committee recommend the extension of the observations in this and in other countries.

SECTION D.—*Zoology and Botany.*

1. Rev. W. Hincks, F.L.S., on some abnormal forms of fuschia.
2. Mr. H. E. Strickland, report on zoological nomenclature.

Ornithology.

3. Mr. H. E. Strickland on the structure and affinities of Upupa *Linn.* and Irris or *Lesson.*
4. Capt. H. M. Drummond, catalogue of birds of the Ionian Islands.
5. Capt. H. M. Drummond, catalogue of birds found in Crete.
6. Mr. W. Thompson, notice of the first occurrence of *Pycnonotus Chrysorrhœus* in Ireland.
7. Mr. R. Ball, notice of the occurrence of *Cuculus glandarius* in Ireland.
8. Mr. J. Blackwall, notice of periodical birds observed near Llanrwst in 1842 and 1843.

Ethnology.

9. Dr. Lankester, Report from the committee on the varieties of human races.
10. Mr. T. Heath (from the Navigator's Islands) on the inhabitants of the Navigator's Islands and the New Hebrides.

On Saturday the section opened with a most interesting notice from the Rev. W. Hincks, on some varieties of the fuschia. He shewed a specimen he had just seen. He referred to the tendency of flowers to adopt a quinary arrangement, so that if the sepals were five, the other parts mostly were either five or some multiple of it. Now the fuschia family had four sepals; but, in the specimen he shewed, the sepals were five, and all the other parts evinced a tendency to follow the example. In another specimen the ternary arrangement seemed adopted. These facts were of much interest, since, by the study of monstrosities, we were guided in our ideas of varieties. It was only lately that due attention had been paid to the subject. In the Linnæan days a monstrosity was passed over with contempt; but, for his own part, a collection of monstrosities in his possession had the greatest interest for him. In his garden a collection of irises were always running into monstrosities.

Professor Forbes remarked, the case brought forward by Mr. Hincks was one of peculiar importance, as it evidenced a return to the normal type instead of a deviation from it, which cultivation is apt to produce.

The president regretted that Mr. Hincks had not brought forward his complete paper. No modern naturalist was equally capable to do justice to the subject; no one had studied vegetable morphology with equal care; even the most distinguished foreign naturalists admitted his claims in this branch.

2. Mr. Strickland's report was merely mentioned slightly as carrying on the work.

3. Professor Strickland read a paper on the genus Upupa *Linn.* and Irrisor *Lesson.* The first of these, being an Irish species, had got a common name, the hoopoe; the others, foreigners, must be content with their Latin one. These birds appear allied; but it was difficult to say whether the resemblance amounted to identity of species or only analogy; for this purpose the question of importance was, what the specific character should be derived from? if the bill was selected, there was a singular similarity, and there were peculiarities in this distinguishing the groups from all other birds—the bill was long, but the tongue very short, which was quite anomalous. Other points in the beak pointed them out as closely allied. On the other hand, taking the feet as the characteristics, there were important differences.

The hoopoe had the front toes short, but the hind elongated and straight, pointing them out as walking-birds, like the lark. The irrisor's short hind-claw proved them to be tree-birds: these points of similarity and distinction led him to consider them as allied species of the same family. The question of most importance next was, to determine to what genus they belonged: they had been classed with the tenuirostres (birds living by suction); but the disproportion between the tongue and the beak forbade the idea. The closely applied mandibles distinguish them also from the humming-birds, living on the sweet juices of flowers, so that he concluded they found their food in the same manner, but in different situations. The hoopoes scooping insects out of holes in the ground, and the irrisors from trees, he thought should form a separate genus for themselves.

Prof. Owen rose to correct the idea that humming-birds live on nectar alone. His own researches led him to study rather the anatomy of birds than their habits; but in dissecting them he was sure that insects formed the staple of their food. They only drank the nectar by way of dessert.

4, 5. Mr. Strickland read a catalogue of the birds of the Ionian Islands and Crete from Capt. Drummond. It appeared that magpies and robins, which here have an immunity, are eaten there.—The president confirmed this; swallows only appeared to escape.

The president exhibited a bird, the Pycnonotus chrysorrhæus, which he had procured in Ireland; this bird was an African species, and was not in the habit of ever visiting England.—Dr. Scott inquired if any steps had been taken by the Association to determine the time and mode of acclimatising foreign birds. The subject had much interest, from the difficulty of keeping them alive with our present knowledge.—Dr. Lankester mentioned that the difficulty of procuring their food was rather the cause of their premature death than the climate; from the provisions of nature they soon became used to the weather.

6. Dr. Lankester read a journal, kept by Mr. Blackwall at Llanrwst, in which he recorded the arrival and departure of particular birds.

7. Mr. R. Ball produced a drawing of a new species of cuckoo (*Cuculus glandarius*). For a long time there was but one species of cuckoo known in Ireland. The Carolina cuckoo was lately discovered, and now this was added to the group.

The president congratulated Mr. Ball on his addition of a second previously unknown cuckoo. He would mention what Mr. Ball had omitted, that he (Mr. Ball) had been the discoverer of the Carolina cuckoo. It was curious that this, an African species, was found in Ireland, and in no intermediate locality; but, in fact, Ireland had almost a southern climate.

10. The Rev. T. Heath read a paper on the inhabitants of the Navigator's Islands. He had been a missionary for the London Miss. Society for seven years. The Navigator's Islands were his chief station, but his attention was drawn to the Harvey Islands, the Harvey Marquesas, and New Hebrides. The people were a remarkably fine race, about six feet high, very well proportioned; the women a few inches lower, and very plump, nay pretty brunettes,—all had black hair, mostly crisp. The chiefs are a remarkably fine race; they intermarry among the aristocracy, but do not appear to deteriorate by it. Their language is the universally spoken Polynesian dialect, but they have, in fact, two: one used by the people, and the other appropriated to the chiefs, a chief's head, or any article of his property, being too sacred to be named in the vulgar language. It is only used to a superior; the chiefs use it in prayer. He had discovered some Sanscrit words in it, but very few. The language was distinguished by its reciprocal conjugation. As usual in the Oceanic dialect, the vowels end words. The young children were named after the god who was most in fashion at their birth. At about twelve years old they were circumcised, which constituted them candidates for tatooing, which done, they were deemed men. Infanticide was not known, and children were never deserted by their parents; on the contrary, widows and orphans were carefully provided for by their relatives. Their morality was not remarkable before marriage, which, however, was early. All bodily senses were most acute; they were industrious also, cultivating yams, &c.; they used intoxicating liquors, though not fermented; now, however, whale-ships had introduced spirits instead of the cava, their old beverage. The neighbouring group, the New Hebrides, were a very inferior race; but had he not seen it in books, he would not consider them negroes. One island, Tanna, was peculiar in many points. They adopted the singular custom of burying a man in the sea with his widow attached to his body; their language also was peculiar, their words ending in a consonant frequently; they did not adopt the custom of tatooing.

Mr. Heath did not think the group had been peopled from America; the opinion of Ellis, Pritchard, and Williams, supposed the Malay coast to have been their origin, in which he coincided. He did not consider the chiefs a different race from the people, as had been thought; they were not mentally superior; indeed the people were a very intellectual race.—Prof. Owen complimented the author on his valuable paper, and concurred in the wish to allot more funds for the carrying out such an object as the Ethnological Society had in view.

GRANTS OF MONEY,

With the name of the member who alone, or as the first of a committee, is entitled to draw for the money.

Mathematical and Physical Science.

Brewster, Sir D. For continuing hourly meteorological observations at Kingussie and Inverness	£12 0
Harris, W. S. For completing the meteorological observations at Plymouth	35 0
Robinson, Dr. For conducting experiments with captive balloons	100 0
Herschel, Sir J. For magnetic and meteorological co-operation	50 0
Brewster, Sir D. For investigating the action of different bodies on the spectrum	10 0
Sabine, Col. For superintending the translation and publication of scientific memoirs	20 0
Baily, F., Esq. For the publication of the British Association Catalogue of Stars	650 0
Brisbane, Sir T. For completing the observations on tides of the east coast of Scotland	100 0
Wheatstone, Prof. For experiments on subterraneous temperature	30 0
	£1007 0

Kew Observatory.

For maintaining the establishment in Kew Observatory	£200 0

Chemical Science.

Kane, Prof. For investigating the chemical history of colouring substances	10 0
Kane, Prof. For inquiries into the chemical history of tannin	10 0
Fox, R. W., Esq. For continuing researches on the influence of light on plants	10 0
	£30 0

Geological Science.

Oldham, —, Esq. For experiments on subterraneous temperature in Ireland	10 0
Northampton, Marquis of. For making coloured drawings of railroad-cuttings	100 0
Owen, Prof. For investigation of fossil fishes of the lower tertiary strata	£100 0
Whewell, Rev. W. For completing level marks in Somerset and Devon	20 0
Milne, D., Esq. For establishing standard level marks on the coast of Scotland	30 0
	£250 0

Geology and Zoology.

Carpenter, Dr. For researches into the microscopic structure of fossil and recent shells	£20 0

Botany and Zoology.

Strickland, H. E., Esq. For experiments on the vitality of seeds	15 0
Jardine, Sir W., Bart. For researches on exotic anoplura	25 0
Portlock, Capt. For a report on the marine zoology of Corfu	10 0
Daubeny, Dr. For investigating the preservation of animal and vegetable substances	10 0
Owen, Prof. For researches on the marine zoology of Cornwall and Devon by Mr. Peach	10 0
Forbes, Prof. E. For researches on the geographical distribution of marine animals	25 0
Hodgkin, Dr. For inquiries into the varieties of the human race	15 0
	£110 0

Medical Science.

Sharpey, Dr. For inquiries into asphyxia	£10 0

Mechanical Science.

Russell, J. S., Esq. For completing the discussion of the British Association experiments on the form of ships	100 0
Hodgkinson, E., Esq. For experiments on the strength of materials	100 0
Fairbairn, W., Esq. For experimental investigations on changes in the internal constitution of metals	50 0
	£250 0
Total of grants	£1877 0

PARIS LETTER.

Paris, August 19, 1843.

Academy of Sciences: sitting of August 14th.—The approbation and thanks of the Academy were awarded to M. C. J. Buteux for his geological sketch of the department of the Somme; also to M. Archiac for his memoir entitled "*Etudes sur la formation cretacée des versants S.-O. et N.-O. du plateau central de la France.*" This letter will be inserted in the *Recueil des Savants Etrangers.*

M. Sandras, for himself and M. Bouchardat, read a work containing the results of different experiments on dogs in regard to the phenomena of digestion. They have proved that liquid fat bodies, or those which can be easily mollified in the digestive apparatus, are absorbed with much greater facility than those whose melting-point is higher. Thus oil passes better into the chyliferæ than all other fatty bodies. The fat of pork, suet, &c., are also readily taken up.

M. Salvetat, agreeing with other chemists in the atomic weights of many elements, differs in regard to strontium and barium. His experiments bring out for calcium 250, as found also by MM. Dumas, Baup, Erdmann, and Marchand; for strontium 550, instead of 547·29; for barium 850, instead of 856. That is to say, the molecule of hydrogen being 1, that of calcium would be represented by 20, that of strontium by 44, that of barium by 68.

M. Jules Barse, from experiments on subjects from the hospitals at Paris, concludes that copper and lead may be found in the organs to dead bodies without the individuals having been the victims of poison.

M. Matteuci has found the phosphorescence of the glow-worm to be a phenomenon of combustion, a result of the combination of oxygen with carbon, one of the elements of phosphorescent matter.

M. Dutrochet described hailstones which had fallen at Noroy on the 10th of August, at 4 P.M.

They were from 3 to 5 centimeters in diameter; their form was that of a very irregular demi-sphere; they were composed of alternate layers of whitish opaque ice, and of transparent ice,—some had five of these layers very distinct.

M. Arago said that this succession of layers was only remarkable for the great number superposed in this case. A more singular and rare phenomenon, which has sometimes been found, is, the existence of a liquid centre in hailstones.

Paris, August 26, 1843.

Sitting of August 21.—The memoir of M. Duvernoy on the structure, &c., of the teeth, principally of shrew-mice, has been approved by the commission, and will appear in the *Recueil des Savants Etrangérs*.

M. Flourens, from his researches on the skin of the human being, and from his having found the pigmental apparatus in all races, infers the common origin of mankind: the universality of the pigmental apparatus he considers a direct proof of primitive unity.

M. Delaunay submitted a memoir on the tidal theory, in which he proposes to shew particularly that the views of Lubbock and Whewell on the cause of the tides of the Atlantic Ocean are not the only ones to account for the discordances which have been noticed between the calculated and observed Atlantic tides.

M. Daguerre denies the usefulness of a fatty film on the surface of plates for the formation of images. The greasy layer left by the cotton, he says, is injurious. If, as it is said, a layer of the spirit of turpentine applied to the plate be no obstacle to the formation of the image, it is because the iodine, being soluble in it, penetrates the layer and comes into contact with the silver. M. Daguerre recommends for the polishing process a mixture of equal quantities of olive-oil and sulphuric acid to be put on the plate lightly with cotton, and then rubbing with pounce-powder, or a mixture of 1 part of nitric acid and 5 of olive-oil.

M. Darla wrote from Chili, date 28 March, 1843, that the comet was seen there on the 1st of March, and that for three days it had two tails; the second springing from the principal about a third from the comet.

A table of earthquakes, from 8th Feb. to 11th May, transmitted from Guadaloupe, exhibits constant shocks up to the latter date.

SKETCHES OF SOCIETY.

THE COCKNEY CATECHISM,

OR

LONDON ONE LIE!

LESSON XXXIV.

Aunt Margery. The editor is so full of science this week, that he has written to me to use a "*magnum bonum* swan-quill pen" for our present lesson, as he fancies it must make large letters, and occupy small space.

Phi. These very pens "at 6*d.* a dozen" are among the Stationery humbugs of London.

Aunt M. There is much in this stationery line to expose; but one does not like to attack the materials by means of which our instructions are communicated to the public.

Pri. Every thing in season: now at this sultry and thirsty time of the year, what do you think of "Champagne-cider at 4*d.* per pot?"

Phi. Why, that it is honester to give a fine attractive name to an English beverage than to vend it under the French epithet for Champagne itself.

Pri. But, speaking of the season, is it not a nice opportunity for Father Mathew to advise water-drinking, for the water-doctors to recommend hydropathy, and for the dealers in furs to lower their prices?

Aunt M. You mingle your subjects strangely together. Water-drinking, to cure intemperance; water-swallowing and wetting, to remove all diseases; and furs at the lowest ebb, to tempt those who neither take the pledge nor the everlasting bath.

Phi. I noticed an amusing example of the last, as we walked out the other day. The shop is announced in big letters as

RUINED!

and an immense seizure of smuggled goods is put forward as the cause of their being sold at the utmost loss.

Aunt M. The efforts to dispose of furs in the *dog-days* is altogether entertaining. Few people would like to wrap themselves in bear-skins with the thermometer at 80°, even at half-price; and both cats-meat, and other meat, such as rabbits' made of cats, are little in demand just now; so that there can be little sale either for the outward or inward parts.

Pri. The idea is enough.

Aunt M. And the hot competition among Canadian Companies, Hudson Bay Companies, and Baffin's Bay Companies, must languish till towards Christmas, when Jack Frost will move their furs off faster than the moths do at present; to save them from which is the grand reason of their desire to sell them to those who will discover too late that they have bought bargains of natural history far beyond their views or hopes.

Phi. Aha, I smell a *rat!* This is the main-spring of the "*ruined*" sales and immense seizures which annually take place at Midsummer. *Fur* is the right Latin for thief, after all.

Aunt M. [sneering.] It is an excellent thing to be learned, and shew your learning.

Pri. Yet we ought not to blame the fur-people for trying to dispose of their wares in the universal puff-way: other shopkeepers of every kind are doing the same. Here are a dozen of cheap haberdashers together.

"27 yards at 25*s.* 6*d.*
Warranted all linen."

Aunt M. And not a single thread from lint in the whole fabric: all cotton, made up in a particular method.

Pri. And here are handsome-looking shawls:

"Paisley, 14*s.* 9*d.*;
Cashmere, 12*s.* 9*d.*

How is it that from distant Cashmere and its invaluable *goats' coats* they should be able to manufacture cheaper than in Scotland, where low wages occasioned so much distress?

Aunt M. The placards speak for themselves. The Cashmeres are an inferior Paisley vamped-up article; and the name is merely to cheat the buyers.

Pri. It is the same, then, I fancy, with these "New Cashmere dresses, 5 yds. each at 4*s.* 9*d.*;" and "new French damask shawls, at 5*s.* 9*d.* the half;" and "Ottoman scarfs, 3 yards long, at **3s.** 11*d.*

Aunt M. All impositions in their titles and properties. Be aware that the worst manufactures have always the most sounding names. To gull is the general object; and there is no absurdity too gross not to be invented, and, in a considerable measure, to succeed.

Phi. But manufactures are, in truth, to be had at exceedingly low prices.

Aunt M. Hence a national evil. The cheap is universally the bad; and from this source springs not only the injuries to purchasers at home, but the loss of character to our exports, which is sapping English trade throughout the world. "Dresses at 3*s.* 10*d.* and 2*s.* 11*d.*" cannot by possibility be much stronger than spider-webs; and "Parasols at 1*s.* 6½*d.*" must be for *moonshine*, and not for sunshine.

Phi. For the *Moonshine* at the Haymarket theatre. But all these things are, at any rate, "warranted fast colours."

Aunt M. And they are fast when worn, either in moonshine or sunshine, or dry weather or rain. They are warranted fast, and fast do they flee.

Pri. and *Phi.* So let us; for the day is most tempting.

Aunt M. So be it.

ORIGINAL POETRY.

HANS EULER.

(*From the German of Seidl.*)

"HARK! Martha, some one knocking: go, let him in, I pray;
It may be a poor pilgrim who wanders from his way."
"God save thee, gallant soldier, be welcome to our cheer—
The bread is white and spungy, the drink is fresh and clear."

"What here I seek is neither your drink nor yet your food;
But if you be Hans Euler, then will I have your blood!
Learn, that for months my vengeance has darkly menaced you—
Yonder I had a brother, and you that brother slew.

And as he lay there writhing, I swore to him his fate
Should be by me revenged on his slayer soon or late!"
"And if I kill'd your brother, in rightful war it fared,
And come you to avenge him? Well, then, I am prepared!

Yet not in house I combat, not door and wall between,
But in the face of that for which all my strife has been:
My sabre, Martha, know'st thou, with which I laid him low:
Should I return not—Tyrol has ample greatness now."

They go with one another up to the steep rock nigh—
The morning has just open'd her golden gate on high:
Hans first, the eager stranger behind, with rapid tread,
And with both still ascending the sun's young radiance shed.

Now stand they on the summit—there lies the Alpine world!
The wonderful, the mighty, before them wide unfurl'd;
The fading mist developes the valleys, rich in charms,
With herds upon their bosom, with hamlets in their arms.

Yonder are giant-torrents,—gulf upon gulf below,—
Above the crowning forests,—o'er all free Heaven's pure brow;
And, to be felt, though viewless, with godlike peace entwined,
In homes and hearts the ancient soul of Truth and Faith enshrined.

On this the twain look down—slow sinks the stranger's hand,
But Hans has pointed proudly to his dear fatherland;
"For *that* I fought—your brother his sword against it drew;
For that have I done battle, for *that* your brother slew!"

The stranger glances downward, then in Hans' face does gaze—
He strives to lift his arm, but that arm he cannot raise—
"And didst thou slay him yonder, in rightful war it fared?
And wilt thou now forgive me? Come, Hans, I am prepared!"

JANET W. WILKINSON.

VARIETIES.

The Cartoons, now about to close, have continued to be crowded; and it is most satisfactory to see people of all classes conduct themselves with such order and decorum as has been daily witnessed in Westminster Hall.

The British Museum has recently been subjected to many robberies of penknives, pencil-cases, and other inconsidered trifles left carelessly about; and a few days ago a gold watch disappeared. It is curious that whilst such depredations are rife where the parties must be recommended and sanctioned, nothing of the kind occurs where doors are thrown open indiscriminately to the multitude.

The Nelson Pillar has begun to get on its bronze Corinthian capital, above which a stone plinth is to be raised for the statue, of Craigleith stone, about seventeen feet in height. The sculptors are at work upon it, as well as upon the embellishments for the pedestal; but they will require considerable time to finish, and the funds are but low.

The Singing Mouse, we observe, begins to attract the notice of the London newspapers. An effort was made to bring an account of it before the natural-history section of the British Association at Cork; but though the mountain laboured, nothing was produced, for the animal had been left in England, and a mere description was thought to be ridiculous. At the same time, it is really, we are credibly informed, a curious phenomenon, and *chirps* in a manner never heard from mouse before—not even "the smallest monstrous mouse that creeps on floor."

Celtic Remains.—In the Duke of Rutland's preserves at Longshaw, near Buxton, has been recently discovered a Hu Cairn, or city of the gods, commonly called in that neighbourhood Cael's Wark. It is an elevated plot of ground or rock, of some extent, barricaded on one side by huge rocky piles, heaped one upon another, evidently by the work of man. Within this enclosure are found fifty rock idols, dagons, &c. One temple is dedicated to Hu Gadarn, the mighty; one to Esus, the supreme god of fire; one to Molk, the god of war, and one to the goddess of victory, Andrasta. To the two last deities human sacrifices were offered. There is also a large temple to Sanham, the lord of death, and one to Baal Sab, the lord of judgment, both perfect; a tolmin, with several tumuli, occupies the centre of this interesting place.—*Altered from the Buxton Herald.*

Sir Charles Morgan.—We have to record the death of Sir Charles Morgan, the husband of the celebrated Lady Morgan, formerly Miss Owenson, and a gentleman also well known to the world of literature by many productions of various interest. Sir Charles was advanced in years, but looked in good health, and much younger than in reality, till a very short time before his death.

LITERARY NOVELTIES.

LIST OF NEW BOOKS.

The Dresden Gallery; consisting of the most celebrated Pictures of the Royal Gallery at Dresden. No. 32, fol. 30*s.*—Wyandotte; or, the Hutted Knoll, a Tale, by J. F. Cooper, 3 vols. post 8vo, 1*l.* 11*s.* 6*d.*—The Old Church-Clock, by R. Parkinson, B.D., fcp. 2*s.* 6*d.*—The Masonic Manual, by the late Rev. J. Aske, D.D., new edit. by the Rev. G. Oliver, D.D., 12mo, 7*s.* 6*d.*—Rose's New Biographical Dictionary, Vol. V., 8vo, 18*s.*—The Three Questions: What am I? Whence came I? Whither am I going? fcp. 8vo, 2*s.* 6*d.*—The Book of Precedents in Parochial Settlements, by S. H. Gael, 12mo, 10*s.*—London, edited by C. Knight, Vol. V., roy. 8vo, 10*s.* 6*d.*—Popular Cyclopædia of Natural Science: Animal Physiology, Part II. 12mo, 5*s.*—The Symbolism of Churches and Church-Ornaments, by Durandus, with Notes, &c., by the Rev. J. M. Neale and the Rev. B. Webb, post 8vo, 10*s.* 6*d.*—China; its Scenery, Architecture, &c., Vol. I. 4to, 21*s.* bd.—Eight Sermons, by the Rev. R. Montgomery, 8vo, 10*s.* 6*d.*—The History of our Blessed Lord, in easy Verse, with coloured Plates, sq. 4*s.* 6*d.*

METEOROLOGICAL JOURNAL, 1843.

	Avg.	*Thermometer.*		*Barometer.*	
Thursday	24	From 53	to 66	29·55	to 29·80
Friday	25	,, 48	.. 67	29·80	.. 29·62
Saturday	26	,, 57	.. 68	29·63	.. 29·75
Sunday	27	,, 48	.. 68	29·83	.. 29·79
Monday	28	,, 43	.. 64	29·74	.. 29·66
Tuesday	29	,, 48	.. 68	29·66	.. 29·72
Wednesday	30	,, —	.. —	—	.. —

Wind on the 24th N. by W. and W. by S.; 25th, S. by E. and S.; 26th, S.W.; 27th, S.W. and S. by E.; 28th. S. by E.; 29th, S.W.; 30th. W. by S., N.W., and E. 24th, morning cloudy, afternoon clear; 25th, morning and evening clear, otherwise cloudy; 26th, generally clear; 27th, foggy morning, otherwise clear; 28th, cloudy, with rain; 29th, generally cloudy; 30th, generally cloudy. Rain fallen, ·03 of an inch.

Edmonton. CHARLES HENRY ADAMS.

DENT'S TABLE FOR THE EQUATION OF TIME.

[This table shews the time which a clock or watch should indicate when the sun is on the meridian.]

1843.	h. m. s.	1843.	h. m. s.
Sept. 2 . .	11 59 41·6	Sept. 6 . .	11 58 23·8
3 . .	— 59 22·6	7 . .	— 58 3·7
4 . .	— 59 3·2	8 . .	— 57 43·4
5 . .	— 58 43·6		

TO CORRESPONDENTS.

☞ In this extra No. of the *Literary Gazette* we have endeavoured to comprehend the proceedings of the two most busy days of the British Association (without trenching much on our usual matters, so slack at this particular season of the year); and trust that the variety of the topics discussed will be sufficient apology, even to the non-scientific, for the length of the whole. Ample and accurate reports of papers we have specified as among the most valuable which were produced,—such as Sir John Herschel's report, Mr. Hodgkinson's new theory, Mr Scott Russell on sound in buildings and on waves, and other communications of much interest in geology, natural history, chemistry, and statistics,—will be found in this sheet; whilst the rest shall follow in due order as they occurred, in succeeding Nos., so as to form a complete record of the transactions and history of the meeting.

Our Paris correspondent will readily recognise the reason of our abridging his valued communications.

ADVERTISEMENTS.

MISCELLANEOUS.

Important Patent Improvements in Chronometers, Watches, and Clocks.

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Metallic Ores.—Iron, Manganese, Copper, Lead, Tin, Zinc, Antimony, Silver, Platina, Gold, &c.

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30	1 1 8	1 2 7	2 0 7
40	1 5 0	1 6 9	2 14 10
50	1 14 1	1 19 10	4 0 11
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1837	39	59	1,000	67 8 4	132 14 6	58 19 9	8 18 4
1838	114	56	3,000	175 15 0	295 9 7	123 0 6	16 9 7

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